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VOL. III. TORONTO, DEC., 1922 No. 4

R. A. McIntosh

THE CANADIAN VETERINARY RECORD

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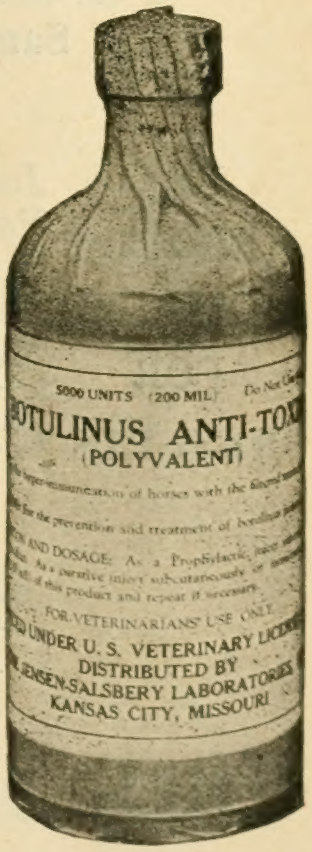

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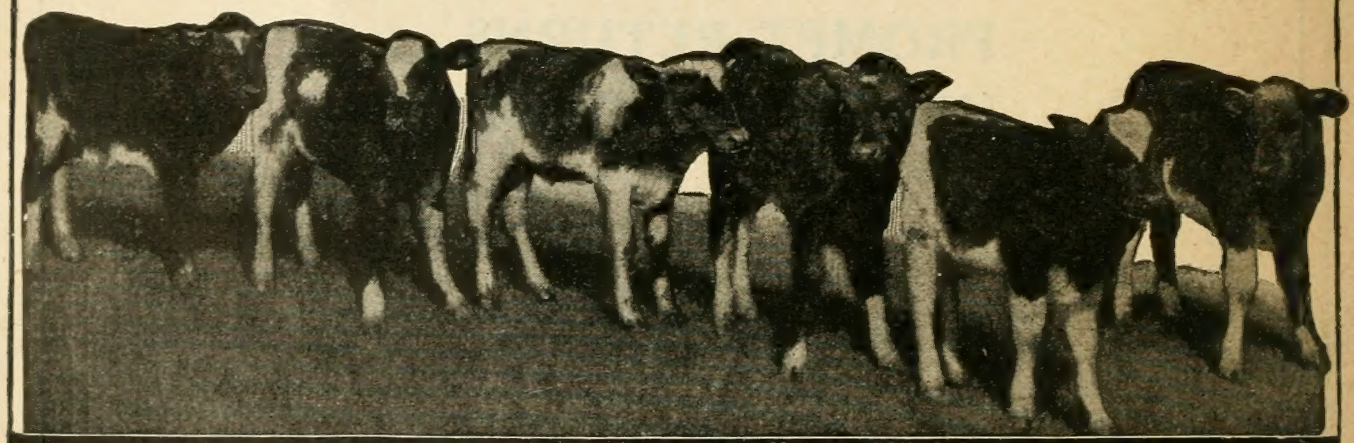

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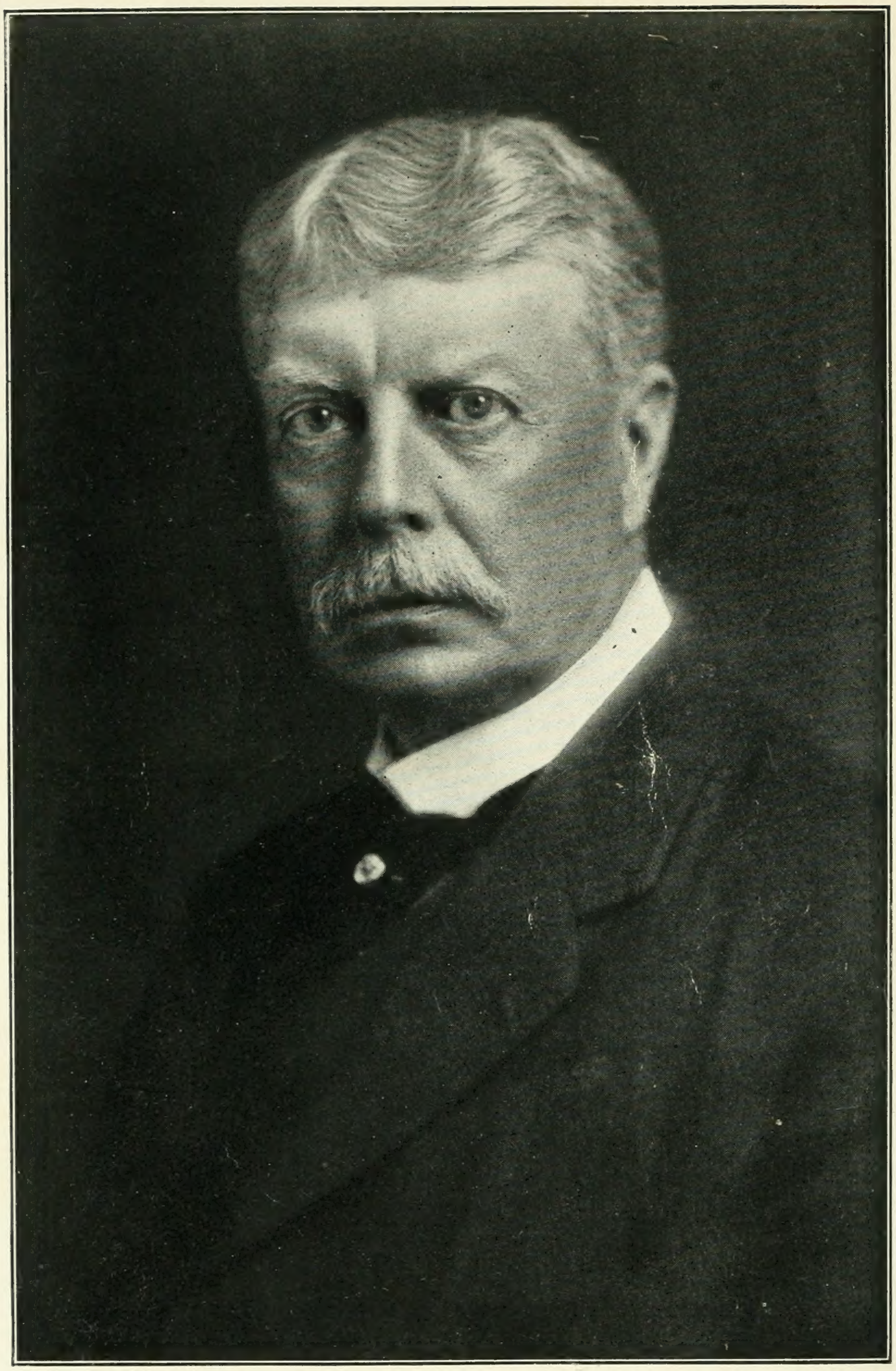

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THE
Canadian Veterinary Record

PUBLISHED QUARTERLY FOR THE PROFESSION IN THE INTEREST OF VETERINARY SCIENCE

Vol. III. TORONTO, DECEMBER, 1922. No. 4.

Editorial

DOMINION REGISTRATION

"It ain't the guns nor armament,
Nor funds that they can pay
But the close co-operation
That makes them win the day.
It ain't the individual
Nor the army as a whole
But the everlastin' team-work
Of every bloomin' soul." —Kipling.

It is doubtful if the proposed Dominion Veterinary Surgeon's Registration Act, will ever be submitted to Parliament in its present form owing to the strong opposition to the Proviso in clause twenty-nine, by some of the Provincial Associations.

Apparently Associations now enjoying Provincial Legislation do not favorably regard a Dominion Act, which would in its interpretation set aside their right to demand Academic Standing for Veterinarians desiring to practice within their particular province. These Associations at present will not consider a Dominion Act containing an amendment to Clause 29. On the other hand there are a number of our Associations who regard Clause 29 with so much suspicion that they will have nothing to do with any programme for the introduction of the Act in its present form. The subjects have been well discussed in Association News and under "Correspondence."

To enable the Act to be passed, with or without amendments, to Clause twenty-nine, will require the united efforts of all Provincial Associations.

At the moment things are at a stand-still and one of the finest opportunities for advancement is in danger of being lost to the Profession. We may rest assured that it is only a question of time. The present generation will perhaps pass into oblivion before a Dominion Veterinary Surgeons' Act comes into existence and immeasurable benefits which could be enjoyed by the present generation will be lost unless some reasonable understanding in regard to this Bill can be arrived at.

At the convention held at Ottawa in November, 1921, a committee was elected for the purpose of presenting a resolution to the members of Parliament, with a view to introducing the Act before the Federal House. This committee now feel that it would not be advisable to attempt presenting the Bill in its present form, unless the said Bill receive the support of all Provincial Associations.

We think that a Bill such as this, is of sufficient importance to warrant the profession being interested in getting it passed. It should not be allowed to fall into the waste paper basket without consideration or an endeavour made for satisfactory adjustment. Surely there is some way of formulating this Bill so that it might be made suitable to meet with the wishes and requirements of the vast majority of the profession, and it is further considered that the present committee might be prevailed upon to meet and discuss ways and means by which this Bill can be made acceptable.

Our Veterinary Associations should not lose any opportunity of bringing before their members the benefits such registration would confer, or how much it would help in the consolidation of a united Canadian Veterinary Profession.

THE CANADIAN VETERINARY RECORD

The circulation of the Canadian Veterinary Record now amounts to between fifteen hundred and two thousand copies per issue.

The Canadian Veterinary Record is circulated to all Veterinarians in Canada.

The Canadian Veterinary Record is mailed to representative members of the Veterinary Profession, Veterinary Colleges, Veterinary Research Laboratories, Libraries and Live Stock Institutions throughout the United States and to many parts of the British Empire.

The need of such a journal as the Canadian Veterinary Record may best be demonstrated, by glancing through the files of letters received from Veterinary Surgeons. All these letters indorse and encourage the efforts made to place before the profession the experience and valuable criticism of fellow workers in the various fields of the ever advancing science of Veterinary Medicine. In addition an endeavour has been made to set forth in a non-partisan spirit the views and expressions of representative men in the Provincial Associations regarding the future of the profession. At various periods during the year the pages of the Record have contained some sharp criticism from correspondents dealing with the proposed legislation in connection with the Dominion Registration Act. These alone have added a tasty piquancy which perchance has enlivened our mediocrity.

It is thought that subjects of a controversial nature should be welcome for discussion, as they stimulate thought and action which can only lead toward better things.

During the past year, it has been intimated that the Record might be reasonably increased to six issues per annum. These suggestions are duly appreciated because it is most natural that we should possess the desire to expand. It is fully realized that a Journal appearing but four times a year finds difficulties in maintaining the same active lines of contact with its readers that a monthly publication would have. However, while we hope to be able to do better and fuller things in 1923, it is not possible to make definite promises at this moment.

Our ambition to expand must be tempered by financial possibilities. We hope that it will be possible to develop the Record to six issues in 1923, but there is not the remotest chance of doing so unless a larger percentage of our readers remember to remit their 1922 subscription before the close of the year.

We ask to be forgiven for continually dwelling upon this monotonous, but vital question of finance. At the same time we feel that it is incumbent upon the Editorial Staff, to state the true condition of affairs. We have been taught that it is not wicked to rehearse facts, and it is considered that in the last issue for 1922, is offered a good opportunity of making the final appeal.

We wish to thank all who have so generously contributed articles, particularly to the Secretary-Treasurers of the Veterinary Associations who have done so much to further the Record achievements.

The year is almost finished and at this time we desire to wish our friends one and all a Very Happy Xmas. and Prosperous New Year.

TORONTO CIVIC ABATTOIR

The reluctancy which Civic Officials show towards spending money in futhering the demands of public health is a well known fact, to those interested in the welfare of the population. This reluctancy is perhaps traceable to several sources, undoubtedly the main factor is that public health measures do not bring immediate results in the way of votes at coming elections, nor is the average citizen apt to appreciate the results as much as a reduction in Street Railway fares or something else which directly affects his purse.

The far reaching results of adequate measures to control and eradicate disease, are often overlooked in comparison with more spectacular measures, which can at once be seen and appreciated by the people.

A specific example of the pennywise and pound foolish policy, often adopted by the Municipal bodies towards Public Health, is demonstrated by the attitude taken by the Toronto Municipal Council in regard to Veterinary Inspection at the Municipal Abattoir of that City.

For many months past the staff of inspectors employed by the City has been hopelessly inadequate and repeated efforts to have the staff increased have met with little success.

This state of affairs is a serious one, when it is considered that owing to lack of Inspection a proportion of the "kill" of a necessity goes through the plant uninspected, and is passed on to the Pubic with no guarantee as to its freedom from disease.

It is surely not too much to expect that Municipal Abattoirs should be an example to all privately owned plants in the country in regard to sanitation and efficient inspection, but under present conditions, there is not one privately owned plant in the City that does not completely eclipse the Municipal Abattoir in these all matters.

The problem is in the hands of the Civic Officials and can be quickly solved by bringing the Inspection Staff up to the needed strength and thus ensuring the health of the public against diseased meats, and unsanitary practices in the abattoir.

DR. J. G. RUTHERFORD

John Gunion Rutherford, C.M.G., D.V.S., Honorary Associate of the Royal College of Veterinary Surgeons; "Membre Correspondant" of the "Societe Centrale de Medicine Veterinaire de France."
Member of the Board of Railway Commissioners for Canada.

The photograph accompanying the December number of the Record, will be readily recognized as that of Dr. J. G. Rutherford, C.M.G., Board of Railway Commissioners for Canada, and formerly Veterinary Director-General, and Live Stock Commissioner for the Dominion.

The following short sketch of his career may prove of interest:—

Born at Mountain Cross, Manse, Peebleshire, Scotland, on Christmas Day, 1857, he came to Canada at the age of 17 and attended the Ontario Agricultural College, being one of the earliest students at that Institution. In 1879, he graduated with honors from the Ontario Veterinary College, and afterwards practised in Ontario, the United States and Mexico. During 1884, Dr. Rutherford settled at Portage la Prairie, Manitoba, where for many years he engaged in veterinary practice and horse breeding operations.

In 1892, he was elected to the Manitoba Legislature to represent the constituency of Lakeside, (Portage Plains) and in 1896, entered Dominion Parliament as representative for the constituency of Macdonald, which at that time comprised over one sixth of the Province of Manitoba.

After acting as special Quarantine Officer for the Dominion Department of Agriculture in Great Britain during 1901, Dr. Rutherford was, the

the following year, appointed Chief Veterinary Inspector, and in 1904, after organizing the Health of Animals Branch, he became Veterinary Director-General. In 1906, he was made Live Stock Commissioner, and in the same and the succeeding year, organized the present Meat and Canned Foods Inspection Service. During his tenure of office many original and radical departures were made in connection with the control and eradication of contagious diseases among live stock of the Dominion, one of the most important of these being the creation of a Pathological Division, and the establishment of a Biological Laboratory at Ottawa.

While Dr. Rutherford was Veterinary Director General, and Live Stock Commissioner, the work of the two branches was brought into close co-relation, joint supervision being desirable, especially in those Provinces farthest from Ottawa.

In recognition of his services to the Dominion, and to the Empire, Dr. Rutherford was in 1910, created a Companion of The Distinguished Order of Saint Michael and Saint George, and upon leaving the Government service, in 1912, undertook a campaign for the encouragement of mixed farming and the development of the Live Stock Industry in the Western Provinces, under the auspices of the Canadian Pacific Railway Company. Accordingly in the spring of 1913, he was appointed superintendent of Agriculture, and Animal Industry in the Department of Natural Resources at Calgary.

From 1913 to 1919, Dr. Rutherford was elected president of the Western Canada Live Stock Union, one of the largest organizations in Canada interested in production of Live Stock. In December, 1918, his portrait in oils, of which the accompanying photograph is a copy, was added by the Live Stock men of Canada to the collection of pictures of Live Stock celebrities in the "Saddle and Sirloin Club" of Chicago.

As will be remembered, Dr. Rutherford, in 1908, represented Canada at the International Congress at Washington, D.C., and his valuable work as Chairman of the International Convention on the Control of Bovine Tuberculosis is well known to all Veterinarians.

Dr. Rutherford was elected President of the American Veterinary Medical Association in 1908.

Apart from his official duties he was largely instrumental in bringing about a far reaching reformation in the matter of Veterinary education in Canada. Mainly through Dr. Rutherford's representations to the University Commission the Ontario Government was induced to take over the Ontario Veterinary College, to raise the standard of matriculation, increase the curriculum and generally place it on a sound and satisfactory basis under the auspices of the Provincial Department of Agriculture and the University of Toronto. It was during his tenure of office at Ottawa, that Dr. Rutherford rendered considerable assistance to the Veterinary Faculty of Laval University in sending two of its professors to Europe to take special courses in Veterinary Medicine and Surgery at the expense of the Health of Animals Branch.

Dr. Rutherford has done some extensive farming in the Dominion. His own farm being situated in the Chilliwack Valley in British Columbia. He became a member of the Board of Railway Commissioners in 1919, and resides in Ottawa.

BRITISH COLUMBIA VETERINARY ASSOCIATION.

At the Annual Meeting of the British Columbia Veterinary Association, held in Vancouver on October 6th, the members voted the sum of $25.00 to be paid the Canadian Veterinary Record. This money has been received by the Business Manager and duly placed to our credit. The Record wishes to convey its appreciation and thanks to the Association for its expression of material co-operation.

*Eradication of Tuberculosis

George Hilton, Ottawa, Ontario.

The control of bovine tuberculosis has always been a very difficult and perplexing problem, chiefly because of its wide prevalence, the immense cost involved in combatting it, and also because of the great difficulty that has always been experienced in obtaining the active support of the live stock owner.

The very character of this disease, and all previous history pertaining to its modes of infection, and methods of spread, indicate clearly that it cannot and will not be eradicated, or even controlled by any half measures. Experience in recent years has, however, shown that it is possible and practical to eradicate this disease from a herd, and to maintain the herd free from tuberculosis.

The eradication of bovine tuberculosis would practically eliminate this disease in hogs, and other farm animals, and it would also materially diminish the number of cases in the human being.

Tuberculosis is by far the most important disease of cows chiefly because of its wide prevalence, the frequency with which the germs gain access to the milk, and because it may by this means be transmitted to man.

Unfortunately, bovine tuberculosis does not produce spectacular symptoms, but on the contrary, it is as a rule, insidious, chronic, and progresses slowly. The bodies of infected cattle are able to adapt and adjust themselves to the slowly increasing destructive changes which the disease causes until extensive harm has been done, or vitally important organs have become seriously involved.

As a result the disease may be present in the bodies of infected cattle for very long periods, in many cases during the whole of their natural life time without there being any external symptoms apparent. During the whole of this period these animals are a source of great danger, as they are expelling the germs in various ways from their bodies.

It is due to the deceptive nature of this disease that the live stock men find it difficult to realize that bovine tuberculosis is the most costly of all diseases of live stock, and that it is also the greatest menace to the public welfare.

It is not many years ago that the champion fat steer at the Chicago International was found on slaughter to be so badly affected with tuberculosis, that it was necessary to put the whole of his carcase into the fertilizer tank.

The economic losses from tuberculosis are enormous. The United States authorities estimate the losses from this disease alone to their live stock industry at twenty-five million dollars a year.

In this country our Federal meat inspection records show that tuberculosis in cattle has increased from 2½% to 4½%, and in hogs from 9 to 20 per cent in the last ten years. Over 33% of the total number of infections found in cattle in our large packing plants under Federal inspection last year were due to tuberculosis, and 70% of the hog infections.

There are other economic losses. Tuberculous cattle are a wasteful market for your feed. It take more feed to nourish a tuberculous animal than one free from this disease. Tuberculous animals are also more susceptible to other disorders, especially to derangements of the digestive system.

You, as dairymen, know only too well that milch cows affected with any digestive disorders very quickly drop in their milk production. You also know that the milk flow is very materially diminished, not only during the attack, but also over a long period after recovery occurs. You have, in fact, experienced very great difficulty in increasing this flow of milk, and you often find that the animal does not recover it maximum flow of milk during the whole of that particular lactation period. The losses experienced from these disorders by the decreased milk production are very serious indeed.

---

*Address given at Dairyman's Association Convention, Edmonton, Alberta.

I have been interested in listening to your animated discussion regarding the values of different food stuffs. You have discussed this matter from the view point of obtaining maximum production at the lowest possible cost. You desire to obtain more adequate returns in your business.

In this connection I would just like to point out that no man is more entitled to obtain the highest possible returns from his investment than the modern dairyman who is supplying clean, wholesome milk, as he is rendering a high public service. I was, however, surprised to find that no mention has been made of the health of your cows. You must not forget that you cannot expect to make the highest returns unless you have as a foundation for your business, a sound, healthy herd. You must have herd efficiency; there is no room for dispute regarding this point. There are, as you know, three essentials for herd efficiency:—first, maintenance of health, second, maximum milk production, third, a good yearly crop of calves. If you fail in any of these essentials you cannot have herd efficiency.

In a pure bred herd the calves may be a source of revenue, but you must have production for records to make your calves valuable. In a grade herd production is the source of revenue but you must have new milch cows in order to maintain the maximum production.

I cannot impress upon you too strongly that the maintenance of a healthy herd far supersedes that of feed and food values.

The economic losses are enormous, and we must not forget that this disease attacks not only the prosperity but the health of the country. Park and Krumweide, bacteriologists of the New York Health Department, have for some years been conducting a searching investigation into the origin of tuberculous infection in the human being.

They have recently issued a report in which they state that 75 per cent. of tuberculous glands and bones in children is of bovine origin, that 66 per cent. of generalized tuberculosis in children is of bovine origin, that 10 per cent. of all tuberculosis in children is of bovine origin and that from 18 to 26 per cent. of all deaths from tuberculosis in children is of bovine origin.

Dr. Ferguson, the Superintendent of the Sanitorium for tubercular patients at Fort Qu'Appelle, stated at the annual meeting of the Western Canada Live Stock Union held in Regina, that there had been nine thousand deaths in Western Canada from tuberculosis last year. He also stated that an examination of the majority of the school children in the Province of Saskatchewan last year indicated that there were 1800 children attending the public schools in that province affected with active tuberculosis.

The question of deciding whether or not the infection is of human or bovine origin is not a very difficult one. Laboratory workers are able to identify these organisms.

The most important feature with regard to tuberculosis is the fact that the cow is the main source of the germs of this disease, and if the tuberculous cow was eliminated at least 50 per cent. of all tuberculosis would disappear.

There are at present time 800 children suffering from tuberculosis of the glands and bones in one of our smaller Ontario cities. This city recently came under the Municipal Tuberculosis Order, and 14½ per cent of the cows supplying milk in the municipality were found to be affected with tuberculosis. The physicians in the city were recommending the milk from a special dairy for children feeding owing to the fact that this dairy was of excellent construction, was maintained in a sanitary state, and the cows supplying the milk showed no symptoms of disease, but were well nourished and kept in a perfectly clean condition. The milk was also handled in the most approved sanitary method.

Upon testing this herd over fifty per cent of the cattle reacted, and upon postmortem four of the cows were found to be so badly affected with tuberculosis they were put into the fertilizing tank. In addition, lesions of tuberculosis were found in the udder of another tuberculous animal.

I desire to especially draw your attention to this case as it confirms my previous statements. The owner of this dairy was an intelligent man; he was a good stock man; he had not detected any abnormal symptoms in his animals, and still the tuberculin test revealed that over half of his animals were badly affected with tuberculosis.

There is no doubt by eradicating this disease in cattle we can play an important role in stamping out the great white plague, a disease with which one Canadian citizen in every hundred is affected.

The opportunities for eradication of bovine tuberculosis are many, but there are also very many difficulties to overcome. Owing to the wide prevalence of this disease, it is essential that steady progress be made. It is quite impossible to stamp it out speedily, if we have not the men nor the money to accomplish such a feat. It has been difficult to obtain money for the limited amount of work that has already been done, and it is therefore necessary for any government to have behind it the full support of the livestock owners in order that adequate sums of money can be obtained for this work.

The Department has two main policies in dealing with this disease:—the municipal tuberculosis order, which is the older of the two, and has been in force since 1914, and the accredited herd plan.

Although under the municipal tuberculosis order the Department undertakes the eradication of tuberculosis from the milch cows in a municipality free of charge, and pays compensation to owners for animals destroyed, there are only at the present time thirteen municipalities in this country who have in the last seven years seen fit to take advantage of the order.

It was necessary to amend this order some years ago, as many municipalities could not enforce by-laws for the compulsory testing of all cattle supplying milk in their municipality. It was therefore amended so as to permit the medical officer of health to classify dairies as "raw milk dairies," or "pasteurized milk dairies".

In this connection I might state that while pasteurization may be advisable as a means of protection it does not equal clean, raw milk from healthy animals in nutritive value.

Under this order the Department has tested in the past year 23,335 cattle; it has slaughtered 2,686 of these animals, and has paid in compensation $134,500.

The accredited herd plan is limited to pure bred herds, and its object is to eradicate tuberculosis on the farm, and to maintain farms, or pure bred cattle raised thereon, free from this disease.

Under this plan the Department has conducted over one-half million tuberculin tests; it has slaughtered five thousand cattle, and has paid nearly one half million dollars in compensation.

This is a practicable, workable plan, and is popular with the live stock men who are familiar with it. The Department has received more applications for accreditation than it can possibly attend to with its limited staff, and the amount of money appropriated for the work.

There is every evidence to show that the live stock men are becoming interested and are anxious to have this plan extended as far as possible.

There are at the present time over seventy fully accredited pure bred herds in Canada.

The eradication of tuberculosis under this plan has made much greater progress in the United States. In that country there are at present time 11,500 fully accredited herds. That is to say, herds that have passed two annual or three semi-annual official tuberculin tests without a reactor having been found. They are making such rapid progress in the eradication of tuberculosis in the United States that unless good progress is made in this country, it will not be long before they will pass regulations prohibiting importation of Canadian cattle into that country, unless they come from fully accredited herds.

As they are spending millions of dollars in this work, and in view of the further fact that every State in the Union, with the exception of California, is co-operating with the Federal authorities in the eradication of this disease, they must for their own protection pass suitable regulations.

It is therefore the duty of every live stock owner in this country to take whatever measures are available to clean up his herd free from further disease.

This action is advisable not only because of the increased revenue, which will result to the live stock owner, but because it is his moral duty to protect as far as possible the lives of the children of our country. It is further our duty not only to protect the health of the innocent and helpless, but also of those that are ignorant and careless.

PERSONAL

The Canadian Veterinary profession have a good friend in Dr. James Waugh, of Pittsburg, Pa. Dr. Waugh has been a constant subscriber to the Record since its inception, and seldom fails to send us a letter before each issue is published.

Dr. James Waugh graduated from the O.V.C. in the early '80s, with his brother William, whose obituary notice is contained in this number. James is 62 years of age and conducts a large practice. In a letter he writes that he has recently performed an ovariotomy on a six-year-old draught mare. This mare had been idle for over two months, was very troublesome in harness although quiet and docile in the stable. Another case mentioned is rumenotomy on a four-year-old Holstein cow, removing a piece of steel wire that had penetrated the pericardium causing pericarditis with effusions into the brisket and tissues of the lower chest. Both cases did well, Dr. Waugh is a member of the A.V.M.A., and Examining Board of the State of Pennsylvania. He has many friends in Canada and is keenly interested in Canadian Veterinary affairs.

Dr. F. Torrance, Veterinary Director-General, met several of the B.C. practitioners in the Health of Animals office, Vancouver, on October 12th in friendly conference. Dr. George Howell, President, B.C. Veterinary Association, brought up the subject of the practitioners assisting the Department in export and accredited herd testing, also the employment of laymen to do livestock sanitary inspection.

Dr. M. L. Olsen, a recent graduate of the Colorado Veterinary College, motored from Denver, Col., to New Westminster, B. C., and has taken the examination to become licensed to practise in British Columbia, and has located at Duncans, V.I., B.C.

Dr. Z. Strong was a delegate from Vancouver to the recent Liberal convention at Nelson, B.C. He succeeded in getting an important resolution adopted, re adequate meat and milk inspection.

Dr. A. W. Lehman has moved from Duncans, Vancouver Island, to Penticton, B.C.

Some Notes On The Agglutination Test For Infectious Abortion.

Ronald Gwatkin

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While carrying out routine blood tests for infectious abortion some modifications in setting up the agglutination and complement fixation tests were tried and in this article the agglutination results will be dealt with.

The agglutination test alone as already stated by many workers, was found to be satisfactory for all routine purposes, but for research work the complement fixation test is of value as a check, and from the comparative work done it appears to detect very slight reactions. The rapid agglutination method is based on the macroscopic slide agglutination first described by Coca as used in cholera examinations and later by Krumwiede (1) as a routine in the examination of feces for members of the typhoid-paratyphoid dysentery types and also as an aid in the search for meningococcus carriers. The difference in the present instance is that a specific antigen is used to detect antibodies in the patients serum. The drop bottle described by Krumwiede was not made use of as this reference was not at hand when the work was done, but it would be very convenient for the antigen. The principles underlying the agglutination test will be outlined before proceeding to the techique.

Peculiarities in the growth of bacteria when cultivated in immune serum were first noticed by Metchnikoff in 1891 and Charrin and Rogers in 1889 but Gruber and Durham were the first to recognise the agglutination reaction as a separate function of immune serum (2). Shortly afterwards Widal applied the test to the diagnosis of typhoid fever.

Agglutination may be observed microscopically or macroscopically, the latter being more in favor on account of the greater accuracy obtainable in the dilutions through using larger quantities. Agglutinins may be present in the blood of normal animals in small amounts and are produced naturally by infection or artifically by the subcutaneous, intraperitoneal or intravenous injection of a suitable antigen. They resist drying and can be heated, some withstanding heat at 65 and 70 degrees C. The formation of agglutinins is a reaction to the body substance of the bacteria themselves rather than to their toxic products.

Agglutinated bacteria are not killed by the act of agglutination and are often as virulent as non-agglutinated cultures. Metchnikoff assigned these antibodies a minor part in regard to immunity, but recent work by Bull (3) seems to indicate that bacteria are agglutinated in vivo as a preliminary step to phagocytosis.

Salt is essential for the reaction, as is shown by the fact that when dialyzed suspensions of bacteria and serum are mixed, no reaction occurs until a small quantity of salt is added to replace that removed by dialysis; or if the bacteria are removed by centrifugation, washed and suspended in distilled water, no change occurs until the salt is added, showing that combination occurs between antigen and antibody without salts, but agglutination only in the presence of salts (4).

According to Bordet (5) the bacteria play only a passive role. Motility is not necessary. The agglutinins unite with the agglutinable substances in the bacteria and lead to changes in the molecular attraction between the bacteria and the surrounding fluid. This is the first or biological phase in which the individuality of the microorganisms count. In the second phase the cells in obedience to molecular attraction show only such peculiarities as occur in mineral particles.

Pre-zone or Proagglutinoid phenomenon is seen in some sera. The lower dilutions cause little or no agglutination while the higher dilutions may give a complete reaction. This is explained by Ehrlich as due to the action of agglutinoids, which having a stronger affinity for the bacteria, combine and prevent the action of the agglutinins, but it is suggested by others that it is due to the presence of a protective colloid (6). In either case the substances are evidently present in insufficient amounts in the higher dilutions. It is unnecessary for the purposes of this paper to go into a discussion of minor agglutinins, hemagglutinins and isoagglutinins.

TECHNIQUE

ANTIGEN. Seven strains of B. abortus were used. These were grown for 48 hours in flat flasks on 2% liver agar prepared according to the method of Stafseth (7) with a Ph reaction of 6.4 to 6.8. This growth was washed off with 0.85% saline solution and filtered to remove the clumps. It was then diluted to a standard made by suspending 0.0003 gm. per cc. of saline solution and preserved with 0.4% phenol. This antigen was found to stand up admirably. It was made in large quantities, thus permitting the use of the same strength antigen over many tests. It remained fully active for four monthe in the ice chest, but after that was not tried out again until seven months, at which time a strong positive serum produced no change in it. For agglutination in high dilutions a double strength antigen was used to allow for reduction to the foregoing strength when mixed with equal parts of the dilutions of serum.

SERUM. A small area over the jugular furrow was quickly clipped with scissors and thoroughly rubbed with a pledget of absorbent cotton dipped in alcohol. The vein was then raised by means of a stout cord drawn sufficiently tight around the base of the neck, and a sterile, clean 16 guage hypodermic needle inserted into the vein. 10 to 15 cc. of blood was collected and allowed to coagulate with the tube in a slanting position. Where the sample was to be collected by someone else at a distance they were advised to fill the tube or bottle up to the cork to avoid shaking in transit (8). On arrival at the laboratory the samples were examined, the clot separated from the side of the container with a sterile wire or glass rod, the tubes placed in the ice chest overnight and the serum then pipetted off. In some cases, when it was desired to set up the tests sooner, the blood was centrifuged and the serum pipetted off at once.

THE TEST. The test used for routine was that described by Rettger and White (9), viz:—Two tubes for each serum to be tested and one tube for antigen control. 3cc. antigen is placed in each tube. Then to No. 1 add 0.06cc. undiluted serum, making 1:50; to no. 2 add 0.03cc. serum making 1:100 dilution; no. 3 is antigen alone. The tubes are shaken gently and incubated at 37°C., for 48 hours. This was modified by using two more tubes, giving additional dilutions of 1:150 and 1:200.

READING. Tubes nos. 1, 2, 3, and 4, if a strong positive, will be perfectly clear, with clumps of bacteria adhering to the sides and bottom of the tubes. The antigen control no. 5, must be uniformly cloudy, without trace of clumping, or change of any kind. Agglutination in no. 1 but not in the others may be counted as suspicious. Complete agglutination in dilution of 1:100 is positive. With a negative serum there will be no change in any of the tubes.

For dilutions higher than 1:200 the two following methods were used.

FOR MODERATELY HIGH DILUTIONS. The serum was diluted with sterile normal salt solution as follows:—

1:100	0.1cc. of serum	+	9.9cc. saline
1:150	1.0cc. of 1:100 dil.	+	0.5cc. “
1:200	1.0cc. of 1:100 “	+	1.0cc. “

and up to as high a dilution as required. 1.0cc. of each dilution is set up with 1.0cc. of antigen, thus doubling them.

FOR VERY HIGH DILUTIONS. A combination of the first and second methods was used. Dilutions prepared as follow:—

1st. dilution		1.0cc. serum	+	1.0cc. saline
2nd.	"	1.0 " 1st. dil.	+	1.0 " "
3rd.	"	1.0 " 2nd. "	+	1.0 " "
4th.	"	1.0 " 3rd. "	+	1.0 " "
5th.	"	1.0 " 4th. "	+	1.0 " "
6th.	"	1.0 " 5th. "	+	1.0 " "

With these any desired dilution can be made by adding 0.06,0.03,0.225 or 0.015cc. of a dilution of serum to 3cc. Antigen.

	0.06	0.03	0.225	0.015
Undiluted	1:50	1:100	1:150	1:200
1st. dil.	1:100	1:200	1:300	1:400
2nd. "	1:200	1:400	1:600	1:800
3rd. "	1:400	1:800	1:1200	1:1600
4th. "	1:800	1:1600	1:2400	1:3200
5th. "	1:1600	1:3200	1:4800	1:6400
6th. "	1:3200	1:6400	1:9600	1:12800

To set up dilutions of, say, 1:400, 1:800 and 1:1600 take 3cc. antigen and add to each tube respectively 0.06cc. of 3rd. dilution, 0.03cc. of 3rd. dilution and 0.03cc. of 4th dilution. It will be noted that 1:1600 could also be made by adding 0.0225cc. of 4th. dilution, but this smaller quantity is more difficult to measure accurately.

RAPID AGGLUTINATION METHOD (MACROSCOPIC). Antigen was prepared by thoroughly rubbing up 0.03 gm. of 48 hour liver agar culture of B. abortus to each cc. of salt solution in a watch glass to make a creamy suspension. No phenol was added as the antigen was made up as required. Drops of this antigen are placed with a loop on a clean glass slide that has been divided off with a grease pencil and numbered. A loopful of each serum to be tested is then added to the correspondingly numbered drop of antigen. A loopful of saline solution is added to one drop to act as a control. Known positive and negative sera are similarly used. The slide is then held so as to catch the light in the same manner as if it were a tube. No change occurs in the control drop or with negative sera, the liquid remaining uniformly cloudy. Positive reactions cause a separation or clumping of the antigen within, as a rule, less than a minute. This can be quite plainly seen when the slide is rocked in the fingers, allowing the drops of liquid to run to and fro on the glass.

224 sera were tested by this method. 1:50 and 1:100 dilutions were set up at the same time in every case and in some the complement fixation test was also carried out. Out of these 224 sera the rapid agglutination method agreed with the other tests in 210 cases, 53 positive and 157 negative. The 14 sera in which the tests did not agree are as under.

No. 85. Positive in 1:50 and 1:100 dilutions. Complement fixation anticomplementary. Rapid agglutination negative.

No. 88. Negative agglutination 1:50 and 1:100. Weak Positive in complement fixation. Positive in rapid method.

No. 92. All the agglutination results negative. Complement fixation weak positive.

No. 95. 1:50 positive, 1:100 negative. Complement fixation weak positive. Rapid method negative.

No. 103. Only slight trace in lower tube of agglutination. Slight fixation of complement. Rapid method negative.

No. 104. Only a trace of agglutination in 1:50 tube. Rapid method negative.

No. 124. Serum of rabbit treated with filtrate. Positive 1:50, negative

1:100. Complement fixation strong positive. Rapid method negative.
No. 125. Serum of similarly immunized rabbit, in which the agglutination titre was even lower. Rapid method negative.
No. 204. Positive 1:50, negative 1:100. Negative in rapid method.
No. 217. Positive 1:50, incomplete reaction 1:100. Negative in rapid method.
No. 247. Incomplete reaction in both dilutions. Negative in rapid.
No. 254. Incomplete reaction 1:50, negative 1:100. Negative in rapid.
No. 257. Positive 1:50, negative 1:100. Negative in rapid.
No. 294. Positive 1:50, Incomplete 1:100. Very slight in rapid method.

On looking over these results it will be noticed that No. 85 is the only case in which rapid method failed badly. No. 88 corresponds to the complement fixation test. In no. 92 all agglutination results are negative. The other tubes shown above are all weak in reaction. With the exception of no. 79 the rapid agglutination method tallied with the agglutination results obtained in every instance where the 1:100 dilution showed a complete positive reaction. While the number of sera tried is not sufficient on which to base an idea of the value of this method, the fact that it was positive in all but one of the sera that gave positive reactions in 1:100 dilution is exceedingly interesting and opens up possibilities of usefulness for this method in establishing rapidly whether or not there is, or has been, B. abortus infection in a herd before, say, administering a vaccine.

DILUTIONS IN WHICH SERA ARE CAPABLE OF PRODUCING AGGLUTINATION. Schroeder (10) states that the titre of sera of infected animals may attain the height of 1:3200. Working with the antigen already described we found the titre in some cases to be higher. The titre of the serum, that is the highest dilution in which it will produce complete agglutination, is dependent to a large extent on the density of the antigen. A serum that in a dilution of 1:1000 may cause complete agglutination of a light suspension may only be capable of producing complete agglutination in a heavier antigen in, say, 1:500 or lower dilution. This must be borne in mind when making comparisons where the antigen concentration is unknown.

The following sera were from two different herds and are the highest dilutions met with from naturally infected or immune cows in this experiment. Double strength antigen was used, which was diluted by mixture with equal parts of the serum dilutions.

		1:500	1:1000	1:1500	1:2000	1:10,000	1:20,000
No. 75	9 yrs. old, recently aborted.	+	+	+	+	—	—
No. 77	6 yrs. old, no abortions.	+	+	+	+	+	—
No. 81	6 yrs. old, 3 cvs. no abortions.	+	‡	—	—	—	—
No. 85	3 yrs. old, aborted.	+	+	+	+	—	—
No. 89	9 yrs. old, at 6 months.	+	+	+	+	+	‡
No. 94	9 yrs. old, aborted at 7 months.	+	+	+	+	+	‡

+=Complete agglutination.
‡=Incomplete reaction.
—=No trace of agglutination.

From this it can be seen that the titre of the serum does not indicate whether an animal may or may not abort, as for example no. 77, a regular breeder with no abortions, has the same titre as 89 and 94. According to McFadzean (11) it shows whether or not the infection is recent. It will be noted that in the above there were no tubes between 1:10,000 and 1:20,000 dilution and had these been used the titre might have been higher than it appears.

A brown mare and a black gelding were injected with large intravenous doses of living B. abortus. 10 doses were administered, 4 days apart and blood was collected for the agglutination test each time. For the sake of brevity all details in connection with these cases are omitted, giving simply the titre obtained. Dilutions were made by the combination method already described, using the regular antigen. After the 7th injection the brown mare's serum gave a titre of 1:40.000, while that of the black gelding gave complete agglutination in 1:10,000 after the 6th injection, these being the highest figures reached.

In the third series 10 rabbits were given intravenous injections of commercial vaccines, sensitized and unsensitized and similar vaccines made in our laboratory to the same standard. The highest titre produced in these rabbits was 1:4,000. A 10 day broth filtrate, as might be expected, produced very little agglutinating power. It did however produce a strong complement binding serum.

CONCLUSIONS:

1. The agglutination test alone is satisfactory for all practical purposes but for research work the complement fixation test should also be used.
2. The rapid agglutination method would appear to offer a very quick and convenient method of establishing a herd diagnosis, as only the sera from animals having a titre of less than 1:100 failed (exécept in one case) to produce a reaction. It would not replace the other tests for more careful work.
3. Agglutination antigen may be kept for 4 months in the ice chest and be satisfactory at the end of that time. After 7 months it fails to be agglutinated by a strong positive serum.
4. Sera from naturally infected or immune cows may produce complete agglutination in dilutions up to 1:10,000 with a light antigen (0.0003 gm. of culture per cc.) Sera from horses repeatedly injected with large doses of B. abortus may agglutinate the same antigen in dilutions as high as 1;40,000. The titre is not of value in deciding whether an animal has aborted or will abort.

ACKNOWLEDGMENTS:

The writer desires to thank Dr. C. D. McGilvray for his help and advice, Dr. F. W. Schofield for bringing to his attention Krumwiede's method of rapid identification of colonies and Dr. R. A. McIntosh for his assistance and interest throughout.

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A GOOD WORD FOR THE GOAT.

Quite apart from the fact that in a review of Dr. Panisset's work in connection with tuberculosis of goats, which appeared in the Record some months ago, we find the Toronto Globe devoting an editorial on their behalf. We learn that the goat has had an evil reputation ever since it was made to bear the iniquities of the children of Israel. Thus Sir Francis Younghusband, President of Royal Geographical Society, and a great admirer of the beautiful in nature, added to the burden at a recent meeting when the scenery of Greece was under discussion. "Whenever the goat gets about in a forest he eats up the sprouting trees, and in the course of time the forest disappears," said Sir Francis. "It is quite probable that in very early times the islands of Greece were covered with forest, but that when human beings came in, bringing with them goats, the result was that the forests disappeared. In Kashmir, where these are now considerable forests one of our main efforts is to keep the goat at a distance. Thousands of goats come up from the plains of India to Kashmir in the summer to feed on the pasture, and our great difficulty is to keep them out of the forests. So perhaps the changes in the scenery of Greece may in some part be due to the depredations of the goat."

But a writer in Blackwood's Magazine puts in a few good words for the goat, and he knows whereof he writes, because he bought for his daughter a herd consisting of "one brown Nanny with two brown Billy kids and one white Nanny with one white Billy kid." They did develop many of the faults commonly attributed to them. Even at the time of milking, which his daughter learned to do with tolerable success, "both goats had a playful habit of stirring the contents of the milk-pail with an apparently uncontrollable hind-leg." He has not yet discovered the thing that the white Nanny, Victoria by name, "the most omnivorous of the gang," will not eat with relish and digest with ease. Yew in any quantity is supposed to be fatal to most animals, but both of the matrons always tried to get a good mouthful from a yew-tree near the recognized feeding grounds. "When, on one occasion, Victoria, tethered in the middle of most luxurious grass, managed to break her rope and at once proceeded to wreck four beds of choice young rose bushes, I found myself expected to find consolation in the remark: 'Wasn't it luck, father, that she did not go for the yew-tree?' "

Admitting these failings, the writer enumerates some of their virtues. In the first place, they are very intelligent, "infinitely more so than sheep." In the second place, not only is a goat very affectionate toward those whom it knows, but it is kindly disposed towards other animals. "Finally," says the writer, "a goat appeals to me as being far the most self-dependent of all domestic animals. It is true that when tethered it will invite human assistance to readjust the rope in which it becomes entangled, but if left untethered and to its own devices it will shortly prove its ability to fend for itself in every way, making a bee-line over hedges or through wire fences to whatever form of food it fancies, and selecting the most shady and comfortable spot for the midday siesta."

Reminiscences of the Great War

The Aid Extended by Humane and Kindred Societies to the Canadian Army Veterinary Corps.

By Cecil French, late Temporary Captain, C.A.V.C., O.M.F.C.

PART II

The Expenditure of the Blue Cross on behalf of the horses of the Canadian Forces as compared with the Income from Canadian sources stood as follows:

Received from Canadian sources—£5,483.2.4½ @ $4.86 2-3=$26,684.50.
Expended on behalf of Canadian units—£1,500.0.0 @ $4.86 2-3=$7,299.90.

(The latter figure does not include the £1,000 which was expended on the Motor Horse Ambulance.)

Just prior to the Armistice, Captain Vickers, in command of No. 2 Mobile Section, being greatly in need of another horse-drawn Ambulance, applied to the Blue Cross for assistance. A vehicle of this kind was sent to him, and, strange to relate, reached him without any opposition on the part of the Imperial authorities. It served a good purpose for the few weeks the horses were still on hand and when the latter were finally disposed of to the Belgians, it was, with the concurrence of the Blue Cross, presented to one of the Belgian Humane Societies.

At the beginning of the War, Brigadier-General Neill had taken with him from Canada a remarkably intelligent trick horse, named "Chatham". "Chatham" was a Kentucky-bred animal and had been trained by Mrs. Davis of Unionville, Ontario, who had also ridden him at the Toronto Exhibition. He had a varied career in France, being present at several battles and coming through unscathed until his beauty was marred by the loss of an eye through an accident. As was the case with all other privately-owned horses, Brigadier-General Neill eventually had to accept for him from the Government the sum of $175, though his value was scarcely less than $600 or $700 on account of his accomplishments. Amongst the latter, he would, at the word of command, bend low to be mounted, lie down mounted or otherwise, do the turkey-trot, fox-trot, single-foot, cross-step, fast trot and canter, and would bow and pick up a handkerchief. Mrs. Turnbull, to whom reference has already been made, conceived a great admiration for this beautiful creature and used his picture and accomplishments to illustrate the lantern slide lectures she gave in many places for the benefit of the Blue Cross. "Chatham" had remained on the strength of the Veterinary Corps and at the end of the War, when the horses were being disposed of, Colonel Edgett thought it would be a graceful act of courtesy and an excellent opportunity to show the appreciation of the Veterinary Corps for the good work done on behalf of the Canadian horses by the Blue Cross, to present "Chatham" to Mrs. Turnbull, which, intention, being approved by the higher authorities, was duly carried out.

Friends in Canada who worked so zealously on behalf of the Blue Cross Fund will feel no small degree of satisfaction that the Secretary, Mr. Arthur J. Coke, together with two other officials, namely Miss King and Mr. Goodif, were always regarded by the Veterinary Officers as real "friends in need" who never turned a deaf ear to their appeals for aid.

We shall close our reference to the activities of the Blue Cross by informing the reader that the efforts of this very worthy Society found grateful appreciation at the hands of the French Military authorities, to whom the help, intended for the Canadian Veterinary Service in France, was in the main eventually diverted. Indeed, the Victoria Branch conducted by Miss Kitto continued to maintain a Blue Cross Hospital with one of the French Armies till the close of the War.

The Royal Society for the Prevention of Cruelty to Animals Fund.

The great and good work accomplished in the past by this Society in the defence of the rights of animals is too well known to need any laudatory remarks. Its War Effort consisted of the establishment of a Fund for Sick and Wounded Horses, for which it was accorded official recognition by the Army Council with authority to act for, and supplement the activities of, the Army Veterinary Corps (Imperial). Its services were accepted on condition that all its servants practically enlisted, and the Secretary enjoyed a Commission with the rank of Captain.

In thus associating itself with the Army authorities, the R. S. P. C. A. virtually surrendered its independence of action and in reality became the agent of the War Department in procuring from the charitable public funds for the construction and maintenance of Veterinary Hospitals and for the supply of Veterinary Requisites in the war zone and at military training centres at home, which, strictly speaking, should have been part of the public charge. And, it naturally followed that the application of these resources was at the behest of the Imperial Veterinary authorities. If the latter decided on a certain line of expenditure, the money was spent; if their approval for a projected expenditure was not secured, the matter lapsed. In big undertakings, such as the extension of the facilities at the Hospital at Havre, the system worked very well, but when it came to a question of the needs of the individual Veterinary Officers and units of the Canadian Forces in the field, these fared badly. The Canadian Veterinary Officers in France were never in touch with this Society and until the Order forbidding intercourse with it was promulgated, many of them did not even know of the existence of the R.S.P.C.A. fund. Consequently, after vain efforts at securing aid through interminable official channels, our Veterinary Officers gave up bothering themselves about the matter and turned to other sources, of the existence of which they were well aware and where they knew a heart-to-heart and prompt response awaited them. It is not for one instant to be doubted that had the existence of this Fund been brought to the knowledge of the Veterinary Officers generally, and had the latter been permitted to make direct appeals, the Society would have done everything possible in the circumstances. But the Society, having tied itself up with the authorities and having relinquished its privilege on entering into relationship with individual officers of the British Expeditionary Force, did not succeed in making a hit with our people.

On the other hand, in England, as with the Blue Cross, so with the R.S.P. C. A., conditions all round were on a different footing. There, both Societies and the Corps retained their independence of action and the rule of no-intercourse did not apply.

The line of action followed by the R.S.P.C.A. in no wise differed from that followed in the case of the Red Cross, which, as it well-known, supported numerous hospitals for soldiers at the Bases in a semi-private but officially-recognized capacity. It is, of course, true that from whatever standpoint one may look at the matter, the money in some way or other was expended in the alleviation of suffering, and the above-mentioned facts are merely stated to show that the Imperial Veterinary authorities, in endeavouring to take unto themselves the sole control of a single resource of this kind, to the exclusion of other similar and equally meritorious resources, only succeeded in bringing about a state of affairs that resulted almost wholly in "miss-fires" as between the R.S.P.C.A. Fund and the Canadian Veterinary Officers and a strong sense of grievance on the part of the latter that obstacles should have been put in their way to hinder them from procuring aid from another Fund liberally supported by their own people at home. It was, of course, this policy of "sole control" that explains the hostile attitude that was exhibited towards the activities of the Blue Cross.

A very substantial sum, namely some $40,000 was expended in making improvements at the Canadian Veterinary Hospital at Havre, which, despite the fact that this institution was virtually an Imperial Veterinary Hospital, resulted in immeasurable benefit to the Canadian personnel employed there. Other sums, as we shall see, were devoted to providing a number of requisites to certain Canadian units.

The Society collected a vast amount of money for its special Fund, largely through advertisements, a very small amount of which, however, came from Canada. The total amount subscribed by Canada to the R.S.P.C.A. Fund, concerning which data were available, was £505.14.2 ($2,461.10).

The extent of the activities of this Society on behalf of the Canadians may perhaps best be indicated by reproducing a letter which was procured for this purpose:

> From Captain E. G. Fairholme, Honorary Secretary, to Captain C. French:
>
> 105 Jermyn Street, London, S.W.,
> October 25th, 1918.
>
> "I have been through our bills and files with reference to what has been supplied, through this Fund, for the Canadian Army Veterinary Corps. It is, of course, only bare figures that I can give you, but we increased the Canadian Veterinary Hospital at Havre by providing stables for 750 horses with of course the increased necessary accommodation for operating theatre, shoeing forges, clipping and washing sheds, and other subsidiary buildings, at a cost of £8,200. We provided a chaff-cutting and corn-crushing machine for the Hospital at a cost of another £115, laboratory supplies costing £20, motor Horse Ambulance for the Canadian Veterinary Evacuating Station £1,100, Horse Ambulances for the 2nd, 3rd and 4th Canadian Mobile Veterinary Sections £120 each, Vermorel Sprayers for the 1st, 2nd and 3rd Canadian Divisions and also for the Canadian Veterinary Hospital, certain Veterinary Instruments for the Hospital, and also Instruments and other Veterinary Supplies, such as rugs, bandages, etc., for the Veterinary Hospital here and for some of the Veterinary Units, including the Canadian Forestry Corps, besides sending, at the request of Colonel Edgett, £35 worth of technical books and technical journals for H.Q., C.A.V.C. and No. 1 Canadian Veterinary Hospital.
>
> We have of course been only too glad to help in this work, and to help the Canadians who have so splendidly come forward to bear their share in the world war against brutality and kultur, but it is naturally a little disappointing that having spent something like £10,000, we should have received so little financial support from Canada itself. We have as far as I can trace, only received £500, in spite of having appealed through the Canadian newspapers, S.P.C.A., etc. Please do not think me petty in introducing this matter, because I feel that it is only that Canadians share the very universal mistake of thinking that the Blue Cross (for I believe they have received very handsome support from Canada) is authorized to work for, and help, the horses of the British Army. Very possibly it may be that while they have got the support we have done the work."

Canadians will hardly feel disposed to share the view of the R.S.P.C.A. as interpreted in the last clause of the above letter. It is as much as to say that the charitable public should have been forced into making their contributions through a channel other than their own choosing, something which public opinion in Canada would scarcely countenance. Nor is there any more reason for the suggestion that whilst the Blue Cross got the financial support it did not make good. The truth is that the supporters of both Societies were ever ready to meet every call made upon them by the Canadians, for which the latter will always feel profoundly grateful, but that the efforts of both were hindered, in the one case by ill-judged interference and in the other through voluntary abnegation of freedom of action.

The Income and Expenditure of the R.S.P.C.A., as between the Canadians and itself, stood as follows:—

Received from Canadian sources—£505.14.2 at $4.86 2-3 = $2,461.10.
Expended on behalf of Canadian Units—£1800.0.0 at $4.86 2-3 = $8,760.00.
Expended on behalf of Canadian
Veterinary Hospital at Havre—£8,200.0.0 at $4.86 2-3 = $39,906.67.

The following letter of appreciation was written by Colonel Neill to the Secretary of the R.S.P.C.A.—

Oxford Circus House,
London, W., April 24th, 1917.

> "I wish to thank you very sincerely for the assistance your Society has rendered to the C.A.V.C. in France, in supplying funds for the improvements in stables and huts, etc.
>
> The great improvement in the condition of the animals under these favorable conditions more than compensates for the outlay.
>
> Everything you have done has been highly appreciated and will be a lasting testimony to the splendid organization which has done so much in this great struggle to alleviate the sufferings of our dumb friends."

Had the War continued longer, there is no doubt that the R.S.P.C.A. would have entered into closer relationship with our Officers in the field through the intermediary of Colonel Edgett, who, when he had taken over the Direction of Veterinary Services in England, interviewed the officials of the Society and requested that a supply of instruments and books be sent to France. These were readily forthcoming and were duly forwarded. An X-ray apparatus for the Hospital at Havre was also asked for and the Society undertook to supply the same, but the Armistice intervening, the project was laid aside.

Kingston Humane Society.

Early in the War, the Kingston Humane Society became actively engaged in relief work for the benefit of the War Horses at the front. By means of subscriptions, collections and entertainments, it raised a total amount of $2,651.50, of which $834.67 was contributed by the Hamilton Humane Society. At the suggestion of Colonel A. E. Ross of Kingston, the money was mainly expended in remitting to the War Office in October, 1915, the sum of $1,858.19 to cover the cost of 3 ambulances. These vehicles became available at a time when all the Veterinary Mobile Sections, Imperial as well as Canadian, were being equipped with a much-needed form of conveyance. In connection with this matter the Director of Veterinary Services (Imperial) wrote to Major Saunders at Havre in December, 1915, to the effect that he was equipping all Mobile Sections at the front with a light horse-drawn Ambulance, of which there would be about 50, many of them presented by the Royal Society for the Prevention of Cruelty to Animals and including the two provided by the Humane Society of Kingston, Ontario. The type was a light float such as was used for transporting cattle in France which it was believed would be better than the heavier vehicles, the idea being to use them for carrying equipment when the Mobile Veterinary Section was on the march and to use them for ambulance purposes when the troops were more or less stationary. He added that he would have 5 Motor Ambulances for Lines of Communication by the middle of the following month, but that he considered them too big and unwieldy for the narrow roads at the front, and moreover, some Commanders would object to them on account of liability to block roads, etc.

In the opinion of the Canadian Veterinary Service, Brigadier-General Moore erred in his ideas as to the adaptability of these floats. They proved to be unsatisfactory though, for lack of something better, were put to considerable use. They were built with only about 5 inches of road clearance and consequently could only travel on good roads. Many horses had to be destroyed through having fallen in places inaccessible to these vehicles and others succumbed through having to be dragged to them on the main roads. As Ambulances, they were scarcely worth the money paid for them and they were not what the Humane Society expected they would be when it ordered them.

After the Ambulances had been paid for, there came a call for bandages for wounded animals and, under the leadership of Miss Mary Going, a Blue Cross Society, was formed as an Auxiliary to the Humane Society. This Blue Cross Society had no connection with the Blue Cross Fund of London, England. Miss Going, than whom there is no more indefatiguable worker in this cause, interested a number of ladies to form a Committee and enlisted the voluntary services of a number of local boys, who in turn formed themselves into a Blue Cross Band with a membership of about 150 from the schools of the city, their age extending from 7 to 16 years. About 30,000 bandages were rolled and packed entirely by these boys, who also collected a quantity of Spagnum moss with which they made additional dressings. The bandages and moss dressings were sent for the most part direct to Captain F. A. Walsh, Veterinary Officer, attached to the First Canadian Infantry Brigade, who used them behind the principal battle front at Vimy, Ypres, etc. Brigadier-General Perreau, Commandant of the Royal Military College, was a strong supporter of the work of the Society and the cadets of the College gave largely to its funds. Mr. J. R. C. Dobbs, Secretary-Treasurer of the Kingston Humane Society, spent a great deal of his time and energy in promoting the success of the work.

The total collections of this Society were as follows:

For the Ambulance Fund	$2,071.50
Blue Cross Band Collections	$ 580.00
	$2,651.50.
Disbursements:	
Remitted to War Office for three Ambulances	$1,858.19
Expenses collecting, etc.	20.54
Cotton for Bandages	504.66
Expenses Blue Cross	47.90
Balance on hand	220.21
	$2,651.50

Regina Society for the Prevention of Cruelty to Animals.

The continually unsatisfied wants of the Canadian Veterinary Officers in the field, even as late as 1918, induced Lieutenant-Colonel Tamblyn, D.S.O., Deputy Assistant Director of Veterinary Services of the Third Division, to disregard the Imperial Order on the subject and send direct to the above-named Society a request for certain requisites to the value of $350, with the following remarks:—

> "These instruments are urgently required, especially for the coming winter campaign. They are not supplied for army use, so that their provision through a private source would be a godsend to the veterinarians in the field, and incidentally, to the animals."

The S.P.C.A. of Regina, which had already sent nearly $3000 to the Blue Cross Fund, promptly responded to the new call made upon it and was preparing to forward these requisites when the Armistice intervened.

Horse Breed Societies and Kindred Associations of Toronto.

The late Dr. A. E. Grange, Principal of the Ontario Veterinary College, wrote early in the War asking if any special equipment was needed at Havre to make work at the Canadian Veterinary Hospital at that place easier and more efficient and requested information. He then made a definite offer on behalf of the Canadian Horse Breed Societies for anything the Hospital needed. Major Saunders pointed out that an Operating Table, such as every progressive Veterinarian in Canada considers indispensable to a properly conducted veterinary establishment, would be most useful. But the Director of Veterinary Services (Imperial) in France did not approve, though the Association was most anxious to supply such equipment and the need of which, throughout the entire period of the War, made itself forcibly felt by every Officer who carried on surgical work. In a letter, the Director made some remarks on acceptance of supplementary articles which are noteworthy in view of the treatment subsequently meted out to the Blue Cross. He expressed his appreciation of the offer of the Horse Breed Societies to provide so much equipment for the Canadian Veterinary Hospital at Havre and asked that his thanks be transmitted. He remarked that though there was the Base Depot of Veterinary Stores at Havre, for the supply of requisite medicines and necessities, there would be no harm in accepting any article deemed necessary to supplement supplies obtained therefrom. But, he opined that an operating table would not be necessary and that the mattresses that had been devised would be more suitable.

A fund amounting to $6,000 was subscribed by these Societies and devoted to the purchase of 20 very fine Horses, Harness complete for the same, an Ambulance and a Transport Wagon, with the understanding that these should go to the front as a unit. But, at this stage there occurred a hitch. It was quite impracticable to send the horses to Europe as a Canadian transaction, for the reason that the Canadian authorities had long since given up shipping Remounts to Canadian units, the Imperial authorities having taken over the entire undertaking for the combined Forces. Consequently, it was necessary for the Department to divert the 20 Horses and distribute them amongst units in Canada, 12 riders being sent to the Royal Military College at Kingston, 4 riders to the Riding School at Quebec, and 4 draft animals to the Citadel at Quebec.

From Mr. H. M. Robinson, Secretary, Hackney Horse Society, to Colonel W. J. Neill:—

181 Simcoe Street, Toronto,
September 13th, 1916

"Lieutenant-Colonel E. E. Clarke, Assistant Director of Supplies and Transports has been kind enough to give me your name and address as the recipient of the 20 Horses, Harness, Ambulance and Transport Wagon that were subscribed for by the above-named Societies of the Pure-Bred Horses and others of Canada. My reason for writing is that I am frequently asked if I have heard anything of the outfit and if it is fulfilling its mission. Would you be good enough to give me any information you may have at your command."

(To be continued in next number.)

Sterility in Cows

(Continued from the June number.)

J. N. Pringle, Toronto, Ontario.

Surgical operations on the cervix must be performed with more than ordinary care, as the continuity of the healthy mucous membrane must be maintained. A desert in the shape of a cicatrix may arrest the progress of the spermatazoon, preventing conception; even the flaps of the swollen first annular fold of the mucous membrane of the cervical canal, and which when seriously inflamed project out of the eternal os, must be removed in a surgical manner.

A description of these operations will be found in the text by Prof. W. W. Williams.

The cervix during the estrual period is soft, flaccid, and the canal is open to a variable degree. Around it there should be a quantity of a clear stringy mucus. Between the estrual periods, the cervical tissue is firm, the canal tightly closed, and only a small quantity of the stringy mucous will be present. When pregnant, the external os is plugged by a firm mass of mucus, which is not easy to detect on palpation. It may be detected by touching with the tip of a finger to which it transmits a sensation of stickiness.

Not infrequently, there is a constriction of the vaginal wall just posterior to the cervix, the opening through which is sometimes very small, preventing thorough examination of the cervix. I have not been able to definitely determine whether or not this may be a cause of sterility, as the organs anterior to it are usually found healthy, but it may at the time prevent conception, firstly, by acting as a mechanical obstruction to the progress of the spermatazoon, secondly, by causing retention of the vaginal, cervical and uterine secretions, which will at least become stale. Dilate this constriction and cleanse the part anterior to it, with saline douches. Such cases do not remain sterile for any length of time.

The vaginal mucosa when inflamed anteriorly, is at first dry and hot, later it becomes moist, the secretions usually being white or opaque, sometimes yellowish (muco-purulent) and less stringy than normal. Some cases met with in heifers the mucus was quite yellow and contained semi-clotted masses. I had actually three on one farm, the owner stating positively that there never was any signs of contagious abortion in his herd.

Some of these heifers had severe cervicitis, when or how they became so affected is difficult to discover. I examined several of the herd bulls without finding any evidence of infection.

One heifer in particular, about twenty-four months old, and had so far failed to conceive. On examination, I found about four ounces of a yellow material in the vagina, containing several semi-clotted masses. The vaginal mucous membrane anteriorly, was indurated, corrugated, and hot. The cervix was much enlarged and intensely inflamed, the mucous membrane being almost black at places. I cannot estimate how long this condition had been present, but have no doubt that she must have been bred three times. Since becoming diseased, the bull, however, showed no sign of infection, nor did he transmit the infection to the three or four cows in the herd which he served during that time.

I treated this heifer by vaginal douches of saline solution, given daily for a week,without improvement. During the second week, she was given four douches with five per cent. solution of lead acetate immediately following the saline douches. On my next examination, the vaginal mucous membrane was found quite dry and hot. The next week the daily saline douches were continued, and every third day the solution was carefully drained off, and two ounces of the suspension of iodoform and bismuth subnitrate in mineral oil was injected into vagina. The cervix, I swabbed once with a ten per cent. solution of silver nitrate, and immediately afterwards with tinct. of iodine. The following two weeks I used tinct. of iodine only. She also had several cysts in her ovaries. She made a good recovery, as she conceived in less than five weeks.

Some operators condemn the use of cervical forceps and state that they should be used as seldom as possible. I have not yet found them to do any harm, and have used them eight times at weekly intervals on the one case, also on pregnant cows without untoward results.

I have also noticed on several occasions, where the cervix had been a long time inflamed that it had become enlarged, thickened and sclerotic. The tissues were rigid, and the cervical canal tightly closed. After being dilated a few times it did not close again, and remained open between the estrual periods. This however does not appear to interfere with conception, neither does it fail to dilate properly at time of parturition. At least I have no history of trouble with any cow up to the present.

PYO-METRA. I have met several cases of pyo-metra which simulated pregnancy rather closely, particularly as follows, the vaginal mucosa was normal, or only showing a slight opacity of its secretions, cervical canal rigidly closed, ovaries normal, one containing a fairly well developed corpus luteum, and the uterus containing only a few ounces of pus. Such cases require careful examination, as palpation of the uterus is the only means of diagnosis, unless one can get an absolutely correct history.

In pyo-metra, the body and horns are equally filled, each horn being as large as the other; in old cows there may be a slight difference, the body and horns are rounded, well filled, and slightly tense. The organ does not show any tendency to gravitate to the floor of the abdomen, but remains high, central and the walls thick; the broad ligament does not relax, nor do the uterine arteries enlarge.

HYDRO-METRA. In a general way the description is the same as above Where there are pints of fluid, diagnosis is not difficult, it fluctuates easier on palpation than in pyo-metra, evidencing the more fluid content. The organ is more tightly filled, more rounded, with thicker walls than in pregnancy. Should there be only a few ounces of fluid, the diagnosis is not so easy. In several such cases I have met with, the cervical canal has not been closed, the fluid escaping immediately on the introduction of a catheter without dilatation.

In cases of either disease, some other part of the genital tube is usually found to be abnormal, e.g., cervicitis, vaginitis, cystic ovaries, ovaritis, atrophy of ovaries. One or both ovaries may be flabby and compressable, showing that they are not active or functioning or may be found containing a degenerated corpus luteum. This body will likely be flattened, softish, cheesy, and easily broken up, or pressed out of the ovary.

Perhaps I may be forgiven if I now give a hint or two to anyone who may be beginning this work, especially young practitioners. In diagnosing pregnancy in its early stages, keep in mind that the uterus has to be gently handled, that the foetus can not be felt, and that the foetal envelopes are just forming; that they are very thin, delicate and easily injured; that the uterus is only slightly enlarged at the sixth week, and shows only very delicate and small fluctuations. The broad ligaments are then only beginning to relax, and the uterus beginning to gravitate towards the floor of the abdomen. Further, one has to keep in mind at all times that he may encounter an abscess in the wall of the uterus, cysts or abscesses in the oviducts, which may be easily ruptured. Should an abscess evacuate into the peritoneal cavity, the result would likely be death. Let me describe two cases.

One cow had been four months sterile. When examining for right ovary, I got a grasp of a small tumour which resembled an ovary. Before I could determine what it was, it burst. Further examination resulted in my finding the ovary which was normal. Fortunately this had been a cyst of some kind, as no harm resulted and cow conceived in a few weeks. The cyst was adherent to the broad ligament. The other cow had been sterile for about one year. In this one I found a number of softish tumours, adherent to broad ligaments, etc., which I diagnosed as masses of adipose tissue. One large tumour also composed of fat, was either in the uterus or on the superior surface of it, firmly adherent or blending with it. It felt somewhat like a mummied foetus, having some very hard fibrous centres and between them softish places. In size it approached a large cocoa-nut; I could not locate left ovary, but found tumours of various sizes in its region.

Post Mortem. The left ovary was scarcely discoverable, being blended with one of these tumours. The right oviduct was cystic, containing a clear fluid, which escaped when incised, and the walls collapsed; it was quite soft and about the thickness of a lead pencil. The left oviduct was also blocked, containing two small abscesses about the size and shape of a large peanut. This case would be well worth further description, but space does not permit.

UTERINE CATARRH. The uterine mucus is normally in masses, not stringy, scarcely so clear as the vaginal mucus and more sticky.

A sample for examination can be obtained by either of the following methods. First, thoroughly cleanse vagina, then insert one hand into it, taking hold of the external os, then insert other hand into the rectum, and massage the uterus backwards towards the cervix. This presses any mucus out into the palm of the hand in vagnia which is then carried out for examination. Second, cleanse the vagina, introduce a catheter into the uterus, then a clear solution e.g. boiled water, or saline solution, is injected into the uterus by the gravity method, the uterus, being massaged per rectum at the same time, and the return flow collected in a clean dish. If the mucus so obtained is brownish in color, it indicates catarrh.

Treatment. Pyo-metra necessitates douching with saline solution at least once each week for some weeks according to case, thereafter with a 2 per cent. solution of Lugol's iodine solution, massaging uterus thoroughly each time, and administering a metritis bacterin. Have had several apparently hopeless cases recover after using this bacterin, combined with other remedies including the suspension of iodoform and bismuth in mineral oil. For simple catarrh (may also include slighter cases of hydro-metra) the uterus should be well massaged at weekly intervals or oftener, and douched at weekly intervals with normal saline solution (add 1% if thought advisable). If recovery is not obtained after two douchings use Lugol's 2 per cent. giving at the same time a good tonic, such as iron, nux vomica, and gentian. There is no doubt but that obstinate cases met with were due to infection, although showing no evidence of it macroscopically.

When examining sterile heifers, especially if the history is not good, I douche the uterus and have found it has not been wasted time or effort. On several occasions in the return flow of douchings small reddish brown bodies about the size of a flax seed were seen. These I took to be small degenerated blood clots. The cervical canal was always tightly closed requiring dilation. Such heifers conceive after one, two or three treatments, even if they have been sterile for twelve or eighteen months. I will collect some of these bodies when I again meet them for examination.

One thing that was noticeable at the Canadian National Exhibition at Toronto this fall, was the comparative absence of farm tractors compared with other years' exhibits. It is evident that horse farming has not become a thing of the past in Ontario.

*An Obscure Disease Occurring In The Arid Transition Zone Of B. C.

E. A. Bruce, Agassiz, B. C.

In the dry interior of British Columbia from north of Clinton and Kamloops to the international boundary in the vicinity of Chopaka, Washington, a disease occurs in cattle and sheep that has not been identified. Although indigenous to the country it does not appear to have a common name; occasionally it is referred to as "Timber Trouble" or "Timber Grass Poisoning", and by members of the Health of Animals Branch as "Kamloops Cattle Disease". The latter name is however a poor one as the disease is neither confined to the Kamloops District nor to cattle, as in addition to sheep it is believed that the so-called "Mountain Fever" of horses will ultimately be traced to the same cause.

Unless specifically mentioned the following remarks apply only to cattle and sheep.

The disease is characterized by inco-ordination, difficult respiration often accompanied by a wheezing or whistling sound, loss of voice, coughing and emaciation. A greenish discharge from the nostrils is also commonly seen.

It occurs in the Arid Transition zone. This zone extends from approximately 2000 to 4000 feet elevation and includes two sub-divisions, the bunch grass prairies that occur immediately above the sagebrush, and the yellow pine forests **(P. ponderosa)** that become mixed with Douglas fir in the moister situations.

The disease does not occur above or below the Arid Transition zone. The northern slopes of the hills being moister produce a more luxuriant vegetation than those facing south, and although affording better pasturage are the most dangerous insofar as the disease in question is concerned.

One of the prominent plants found on all ranges upon which the disease occurs is a milk vetch **(Astragulus campestris)** this grows in small tufts 8 to 16 inches high and has whitish to mauve flowers tinged with purple.

A. campestris commences to flower on the lower levels of the affected zone toward the latter part of May, and it is about that time that the first cases of the disease develop. Most of the cases occur in June, but they may be looked for until towards the last of August.

It is generally conceded that there are more cases in a dry summer following a wet spring.

The disease may appear inside of five days after being pastured in the affected zone, as short a time as two days has been reported for sheep.

Susceptible animals are those that are strangers to the range in question and especially so if they are lactating females. Such kind of animals may show a mortality of 10% or more. Males and females that are not in milk are seldom affected, or if so only slightly; such kind of stock if native to the range are practically immune, and many lactating native animals are so also, one attack however, does not necessarily confer immunity.

It is difficult to arrive at a satisfactory estimate of loss from this disease, and although 10% losses have been known in cattle and 15% in sheep on the whole the disease is benign. Newly imported animals may show a 30% affection without any deaths, on the other hand in one lot of 15 head imported from Alberta in April, 11 took the disease during the year and 3 died (20%). The most serious loss results from the emaciated condition which may continue for months.

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*Delivered at the Northwestern Veterinary meeting held in Vancouver, B. C., July 26th and 27th, 1922.

Symptoms. The temperature remains normal. The prominent symptoms are loss of voice, inco-ordination, and emaciation; difficult respiration accompanied by a wheezing sound that would be roaring if the subject was a horse, the tongue being extended and in bad cases cyanotic. There is usually a cough, and often a greenish discharge from the nostrils. The loss of voice may be complete, and may never be regained. Inco-ordination is especially well marked in the hind limbs and is more characteristic in cattle than in sheep; the hind quarters sink to within about two feet from the ground when the leg is brought forward. In other cases one leg may become hooked over the other and the hind feet knock together. The animal may have great difficulty in rising and yet have fair control of the front legs. In some cases the weakness in locomotion is much in evidence, in others the gasping for breath. Sheep have a weak swaying gait, and in some cases a string-halty jerking of the hind legs which may be accompanied by an involuntary slapping down of the front feet. Emaciation is usually well marked and rapid, but some animals keep in fair condition. In sheep slight tympany has been noticed and gritting of the teeth. Colicy or other pains are not in evidence. The cough may persist for months. The nasal discharge is commoner in cattle than in sheep. An unusual symptom noted by Dr. George of Kamloops was temporary blindness in three cows, this usually passed off in a few hours but in one instance persisted for two days; the eyes were staring and the pupils dilated; the condition occurred upon several occasions.

The appetite is usually fair but there is some difficulty in swallowing which appears to be more pronounced when drinking.

Autopsy. Nothing distinctive or outstanding is noticed on postmortem. The most consistent changes are found in the lungs, oedema, emphysema, bronchitis, or broncho-pneumonia being found. In some cases the mucous and pus in the bronchi is greenish and small pieces of grass or other food can be found. The heart is usually soft and the amount of pericardial fluid increased. Pericarditis is fairly common. In general the lesions found are those of asphyxia or of broncho- pneumonia and anaemia. The pneumonia appears to be traumatic and is incidental to the paralysis of the throat. While the meninges of the brain have been slightly congested in some cases, in others the brain and cord have appeared normal. Microscopically the blood shows anaemia but no bacteria; the pericardial fluid and various organs are negative for bacteria. The cord, vagus nerve etc., have not been sectioned, this is admittedly a mistake that will be rectified at the first suitable opportunity. The post mortem findings are based on about 40 autopsies conducted by Drs. Hadwen, Paxton, George, the late Dr. Plaskett and a few by the writer.

Course. The disease may develop inside of a week after being on affected range. Owing to the fact that cattle are seldom seen after being placed in the timber it is impossible to say how soon after symptoms are shown until death will occur; in sheep however, it may occur in about four days. In the majority of cases death does not occur for a few weeks, but the secondary pneumonia may cause death 4 months or more later. Some animals will fatten up, keep wheezing or coughing and eventually die. In those that recover the voice may be permanently lost.

Experiments. Some years ago 10 head of healthy yearlings were imported from Alberta and were handled as follows:-Four were inoculated subcutaneously with 20 cc. of jugular blood from typical cases, three received nasal injections with material from cases showing nasal discharge, and three were kept in close contact with five typical cases for some months, all results being negative. Two affected sheep were shipped to Agassiz, but the disease could not be transmited to experimental animals either by inoculation or contact.

Judging from the foregoing and from the lack of bacteria in different specimens examined, the disease is evidently not contagious or bacterial in origin.

In 1916 it was thought that the disease was somewhat similar to lathyrism and some 73 lbs. of **Lathyrus ochroleutus** was fed to a sheep with impunity. It has since developed that this was wasted effort as some affected ranges have since been found upon which this plant does not appear.

In 1917 a supply of **Astragulus campestris** was secured from a range near Chopaka, Washington, where heavy losses had occurred in sheep. During transit this became slightly heated and developed a mound belonging to the species Aspergillus.On June 16th commenced to feed two lambs. One lamb was fed 114 lbs. until the 30th of July when it hung itself in a wire fence; nothing very definite can be said about this animal, except that upon one or two occasions it was thought to be a little uncertain in its gait. The other lamb was found dead on the morning of July 4th after having eaten about 37 lbs. of the Astragulus. On the thirteenth day of feeding (June 28) it was noticed to be standing with the hind legs widely separated. On July 1st a similar action was noticed, and when made to move did so slowly and was inclined to drag the hind legs; it appeared to feel the heat. The next day it was noticed to slip twice in bringing the hind legs forward and fell, appeared dopey and distinctly weak in the hindquarters. On July 3rd the animal was weak, had a staggering gait, slight discharge from the nostrils, slow pulse (54), normal temperature (102.6), appetite unimpaired. Found dead the next morning. Autopsy showed nothing distinctive to which death could be attributed, the greatest change being found in the heart which showed evidence of pericarditis. Slight congestion of the lungs, kidney and meninges of the brain. Other organs appeared normal. No bacteria could be found on examination.

In this experiment a mistake was made in not using lactating ewes, It cannot be stated definitely that this lamb died of the disease in question, but what one can gather the symptoms (and post mortem appearance) correspond fairly well, due allowance being made for the difference in altitude (Agassiz, 52ft). At a high altitude the breathing would be more difficult and inco-ordination would be more marked in the hills.

In 1921 the following experiment was conducted in the Similkameen at an altitude of about 3000 ft., with ewes that had lamb at side. Feeding periods 10 days, from June 24th to July 3rd inclusive.

Sheep 1. Aged. Fed 70 lbs. **A. campestris,** 40 lbs. of which was in seed. None of the sheep cared for this weed if at all wilted.

Sheep 2. Age 8. Had a touch of the disease as a yearling. Had not been on the range for two years, and has always been kept out of the timber since her attack as a yearling. Fed 67 lbs. **A. campestris,** 40 lbs. of which was in seed.

Sheep 3. Age 3. Fed 72 lbs. mixed feed, no Astragulus. Feed consisted largely of **Balsamorhiza sagittata, Rhinanthus crista-galli, Gaillardia aristata, Heuchera ovalifolia, Senecio pseudoaureus, Pentstemon confertus, Erigonum heracleoides, Castillejia miniata, Arnica fulgens, Sedum stenopetalum,** species of **Arabis** and other plants.

Sheep 4. Aged. Had the wrong lamb. Fed 70 lbs. as follows:- 19 lbs. **A. campestris,** 32 lbs. pine grasses (chiefly species of **Calamagrostis**), and 19 lbs. mixed plants.

A pack-horse tethered out left **A. campestris** alone, although horses are known to eat the plant at times.

All the sheep remained healthy. Owing to the fact that the owner had recently sold practically all his sheep only a few remained from which to make a choice. As native animals are more or less immune better success could have been expected if the sheep had been brought in from outside, and if a greater number were under experiment.

Investigation of the disease presents some difficulties, chiefly on account of the comparative inaccessability of the affected ranges, and the reticence of owners, many of whom say nothing through fear of injuring the reputation of their range; as a definite instance of the latter may be mentioned a sheep rancher in the Ashcroft district who when directly questioned, stated he had had trouble but he thought it was peculiar to his range, and although it had cost him $3000.00 in losses, he had not reported the trouble.

Mountain Fever of horses. It has already been stated that this affection is thought to be due to the same cause as the disease described in cattle and sheep. The arguments in favour of this theory are that the disease occurs on a similar range, at the same time of the year, affects recently imported animals more severely, is worse in dry summers following wet springs, and as with the cattle and sheep, trouble is more likely to appear when on hills with a northern aspect. The only marked difference that can be mentioned is that the trouble does not appear to be confined so closely to lactating females as in cattle and sheep. Cases in calves and lambs have not been reported. Cases when seen in foals will be found to be in those that have lost their dams. Another point of similarity between this disease and that seen in cattle and sheep is that if the animals are brought down to lower levels they may recover and new cases do not develop. The mortality may exceed that of cattle and sheep.

One sheep rancher who has had a great deal of experience with the disease, states that he had a colt tethered out for two or three days on a side-hill where **A. campestris** was growing profusely, and that the animal had the same disease as the sheep, and that he thought it was going to die but eventually recovered.

Symptoms. The temperature is normal. If standing undisturbed the animal appears to be normal, but if made to move soon shows signs of distress; the nostrils are distended, the breathing laboured, roaring well marked, the animal lies down, rolls, defaecates, breaks into profuse perspiration, the mouth wide open emitting foam, the tongue cyanotic, in fact the animal looks as if it was going to die ofasphyxia. If the temperature is now taken it will have risen two or three degrees above normal. These paroxysms last from 5 to 15 minutes, but have been noticed to continue for 30. After an attack the animal appears exhausted but otherwise normal. Very slight exertion tends to bring on an attack. Emaciation follows repeated attacks and the animal finally succumbs to one of these. In some cases a secondary pneumonia develops, but in many cases if brought down from the affected zone in time recovery occurs slowly.

Autopsy. As in the case of cattle and sheep this may show very little beyond the lesion common to asphyxia. In some cases where secondary pneumonia develops this is often of a gangrenous type.

Treatment and Prevention. Affected animals should be brought down from the affected zone to as low a level as possible; while the disease does not occur above the Arid Transition zone it is not recommended that affected animals be moved there as the increased altitude seems to aggravate the symptoms. Benefit is derived from the use of powdered nux vomica given twice daily for two or more weeks in the following doses: horses, ½ to 1 teaspoonful, cattle, 1 to 2, sheep, ¼ to ¾.

To prevent the occurrence of the disease, lactating cows or ewes should not be put into the Arid Transition zone from the middle of May until the latter part of August. They may be either run above or below that zone. Dry cows and ewes and male animals may be run in the affected zone during the months mentioned, as although the disease is sometimes seen in such animals it is not common and is usually of a mild type. Horses whether they have been recently imported or not should not be pastured on such range during the proscribed months unless they are native to that range.

It should be borne in mind that the slopes facing toward the north are the most dangerous, and that they are most likely to cause trouble if a dry summer follows a wet spring.

The Cause. While it is not possible to say that the cause of this trouble has been definitely isolated it is undoubtedly due to eating poisonous vegetation. The plant that is suspected as causing the disease is **Astragulus campestris** as it always associated with the trouble. It grows in abundance on all affected ranges and does not do so on unaffected ranges. The disease occurs during the time that this plant affords food, does not occur before it is in evidence, nor after it has dried up. Where the disease occurs evidence always exists that this plant has been eaten. The disease is worse on northern slopes and on such slopes **A. campestris** is more luxuriant than on southern. The disease may appear in the non-timbered as well as the timbered sub-division of the Arid Transition zone,**A. campestris** occurs in both divisions.

To sum up the presence of this plant indicates suitable ground for the appearance of the disease in susceptible animals.

DOPING OF RACING HORSES

In a special cablegram to "The Daily Racing Form", of recent date, it appears that the American Turf Colony at Paris, France, has been thrown into a furore by the latest development in the "Doping" investigation, which is being conductd by the Stewards of the "Societe D'Encouragement".

Acting on the charge that A. K. Macombers Black Larry was "doped" at Deauville, the stewards have withdrawn the license of T. Murphy, the trainer for the American owner.

Eugene Leigh, one of the leading American trainers here was fined One Thousand Dollars after one of his charges Paul Wertheiners "Select" was found "doped". The investigation has resumed a thoroughly interesting tinge; the decision in his case to go unquestioned. He vehemently protests innocence, but plans a strong fight for vindication.

Dr. W. A. Thompson of Elmvale, Ontario, is using Fleischman's Yeast Cake in the treatment of Diseases of Nutrition in Poultry.

He states in his letter that he has used Fleischman's Yeast this summer with considerable success.

One cake of yeast is dissolved in one-half pint of luke-warm water for moistening a mash for every ten birds. This treatment is given twice a day. "Results are seen to be strong healthy birds with extra development. Plumage luxuriant with a fine silky texture and a remarkable absence from leg weakness." "Leg weakness was fairly large in birds denied the yeast ration."

Dr. H. J. Davis of Aylmer West, Ontario, writes to the Record to ask if any reader has met any cases of horses poisoned by "horse-tail," or "water-rush"; also what method of treatment is advised?

BIRTHS

AUBRY—Congratulations to Dr. and Mrs. H. Aubry of Montreal on the recent arrival of a boy. "A Future Veterinary Inspector," says Dr. Aubry.

BESCOBY—To Dr. and Mrs. F. H. Bescoby of Los Angeles, California, on September 8th, 1922, Felix John, a son and heir.

Dr. Bescoby is a graduate of the Ontario Veterinary College.

GWATKIN—At Guelph General Hospital, September 2nd, 1922, to Dr. and Mrs. Ronald Gwatkin, a daughter (Jean Elizabeth).

MARRIAGES.

GRANDMAISON—PAULIN—The marriage of Dr. E. Grandmaison, took place on August 14th, 1922, at Montreal, Quebec, to Miss Helen Paulin, of Montreal.

LABELLE—PAQUETTE—On September 4th, 1922, Dr. J. Alph. Labelle was married to Miss Lillian Paquette of St. Martin, Quebec.

DEATHS

GWATKIN—On Sunday, 29th October, 1922, at 49 Glasgow Street, Guelph, Jean Elizabeth, infant daughter of Dr. and Mrs. Ronald Gwatkin.

JAQUES—We regret to report the sad death of Dr. John Jaques of Fisherville, Ont., on Oct. 30th. Dr. Jaques had been to Simcoe to meet his son who is employed in the local Branch of the Bank of Hamilton. On returning about midnight in a Ford runabout car, they were proceeding over the new Provincial Highway. At the place where the fatality occurred a wooden bridge had been removed to make way for a new cement structure. According to reports, although wooden rails had been placed on either side, no red lights were visible. The car was travelling at a fair rate of speed, crashed through the rail and overturned in the creek in two feet of water. Dr. Jaques was pinned underneath the car, while his son was thrown clear and escaped injury. The 18-year-old lad was unable to raise the car to release his father, who was drowned before assistance could be obtained.

Deceased was a comparatively young man. He was very popular with all who knew him. During the Great War he served as a Captain with the Imperial Forces in Mesopotamia and France. He was also a veteran of the South African war and held a Commission in the Reconstructed C.A.V.A. in Military District No. 2. He leaves to mourn his loss his wife, one son, and his father, all of whom reside at Fisherville.

We extend the joint sympathy of the Record and its readers to the sorrowing relatives in the loss they have sustained.

McNAUGHT—Dr. David McNaught, of Rapid City, Man., a graduate of the Ontario Veterinary College in 1872, and Member of the Veterinary Association of Manitoba, sinc 1896, did at the age of 82 years at his residence in Rapid City, where he lived for 41 years. Dr. McNaught had the honor of being twice returned as a Member of the Provincial Legislature of Manitoba for the Constituency of Hamiota. He was born at Penport, Scotland, and came to Canada with his parents when eight years old. He leaves to survive him three sons and three daughters. Mr. John McNaught of the Great Northern Railway, Minneapolis, being a son of Dr. McNaught.

OBITUARY

MURRAY—Dr. G.P. Murray a graduate of the Ontario Veterinary College in 1883, and a member of the Veterinary Association of Manitoba for over 26 years, died at his residence in Tuxedo, August 4th. Dr. Murray had been in poor health for some time. After practising a number of years in Winnipeg, he removed to Warren, Manitoba, where he went in for extensive farming and raising of purebred livestock. About four years ago, he retired and returned to Winnipeg, residing at Tuxedo, until his death at the age of 72.

WAUGH—Dr. William J. Waugh, Washington, Pa., U.S.A., died suddenly from apoplexy on August 16th last at the age of 65. Dr. Wm. Waugh was a native of Pennsylvania, graduating with his brother, James, from the Ontario Veterinary College in 1882. For fifteen years he was Regimental Veterinary Officer with the 3rd U.S. Cavalry, resigning his commission at the close of the Spanish-American war to engage in private practice.

For the past twenty-four years he enjoyed a large and lucrative practice during which he occupied many prominent positions both in veterinary and municipal affairs. He was an official of the B.A.I., member of the A.V.M.A. and City Councillor. He is survived by two brothers, James and David (both veterinarians), two daughters and three grandchildren.

ONTARIO VETERINARY COLLEGE.

The Ontario Veterinary College commenced the 1922 term in its new quarters on College Heights, Guelph, on October 1st.

The College is now situated in an eminently suitable position in the heart of a prosperous agricultural district and enjoys the advantage of being in close proximity to the magnificent group of buildings and campus of the Ontario Agricultural College. The Veterinary College itself is completed and the hospital nearly so. These buildings are fully modern throughout in arrangement, in facilities and in equipment and lack nothing requisite for successful instruction in Veterinary Science.

In addition to the subjects taught at the College the following work is taken at the O.A.C.:—Animal husbandry, chemistry, botany, physics, biochemistry, public speaking and journalism.

SIR J. M. HIGGINS DONATES £2,500 ANNUALLY TO VETERINARY RESEARCH.

A despatch from Melbourne, Australia, says that Sir John Michael Higgins, chairman of the British Australian Wool Realization Association, known as "Bawra", has given £5,000, representing half of his annual salary, to charitable and other institutions, including £2,500 to the University of Melbourne for the promotion of veterinary research.

Sir John made similar gifts in 1921. He holds the honorary position of chairman of the Commonwealth of Australia Central Wool Committee, For some years he practised the profession of metallurgist.

ANDREW SMITH MEMORIAL FUND.

A statement of the Andrew Smith Memorial Fund has been received from Dr. George Hilton, of Ottawa. It was intended to publish it in this issue of the Record but found that every available column had been used, with the result that we shall have to take the subject up in the next issue.

Diseases In Poultry

Under this heading will appear from time to time, articles dealing with common diseases of the domestic fowl.

The Editor of these columns is a Veterinarian of considerable reputation in Poultry Diseases, who has for many years, and is still, engaged in the study of this branch of work.

SCALEY LEG OR FOOT MANGE IN FOWLS.

A. B. Wickware, Experimental Farm, Ottawa.

Scaley Leg is a term used to designate a parasitical disease of frequent occurence amongst fowls, characterized, as the name signifies, by the appearance of large scales or crusts on the shafts of the legs and on the feet.

The disorder is caused by a small mite belonging to the family "Sarcoptidae" thus being closely related to the parasites responsible for mange or scabies in horses, cattle, sheep, etc.

This mite **Cnemidocoptes mutans** is very small in size and can only be distinguished by the naked eye as minute yellowish particles situated in small cavities beneath the outer crusts In order to clearly demonstrate the parasite, a microscope must be used, when young and adult forms may be readily observed.

It is seldom that the affection is seen in pullets, as the rate of development is so slow that the fowls usually pass into the yearling stage before clinical recognition becomes possible In fact, experiments have shown that pullets may be left in contact with affected cockerels for several months, without developing the condition.

The disease is evidently transmitted while the fowls are roosting, as the movements of the adult parasites when viewed under the microscope are very sluggish, and would suggest the improbability of parasites passing from fowl to fowl except when the birds are in a state of rest. The larvae or young forms are, however, more active, and may be instrumental in setting up an infection.

After passing from an infected to a healthy fowl, the mites burrow under the scales of the feet and legs and invade the deeper tissues. The irritation thus produced, leads to an inflammatory reaction in the process of which a proliferation of cells takes place accompanied by an exudation or serum. As the process continues, large accumulations of cellular material collect beneath the normal scales forming large crusts which in cases of long standing have a whitish appearance. As in other parasitical conditions, it is possible that the normal body reactions lead to a deposition of calcium salts thus giving the legs the appearance of being covered with lime-like deposits.

Ordinarily, fowls suffering from a mild attack of scaley leg. are not seriously inconvenienced, but when the disease extends upwards and involves the hock or tarsal joint, the birds become very lame and appear to suffer severely. In such cases, the birds lose weight, become cachetic and eventually die. Occasionally, the feet may become so badly diseased as to result in the loss of a number of toes.

While scaley leg is not of great economic importance, it occasionally may result in a number of deaths amongst older fowls. The most harmful effect, however, lies in the fact that fowls intended for market purposes are rendered unsightly and birds used for exhibition, while not totally disqualified, are liable to be heavily penalized in the scoring by the judges. It is also probable that the constant irritation reduces egg production to an appreciable extent.

Scaley leg is quite amenable to treatment, and if taken in the early stages, a cure can usually be affected in a short period of time. Cases of long standing are more resistant and several weeks are often necessary to complete recovery.

Several remedies are available and can be used with equally good results. A simple method of treatment is to catch the fowls at night while roosting and dip their legs in a mixture of one part kerosene or coal oil to two parts of raw linseed oil If a quick cure is imperative, it is necessary to soften the crusts with warm water and soap, using a small nail brush for the purpose. In this way, many scales will be removed thus enabling the mixture to more readily come into contact with the parasites. Care should be taken to allow the excess to drip off before replacing the birds upon the roosts as the kerosene may irritate the skin of the feathered portions of the body.

Another highly recommended remedy is prepared as follows:—Mix one part of Oil of Caraway to five parts of vaseline. This ointment, while very penetrating, causes but little irritation, and may be rubbed into the affected areas every few days until signs of the disease disappear.

In addition to local treatment of the affected parts, the fowl houses should be thoroughly disinfected to destroy any mites which may be on the roosts or in the cracks of the buildings. For this purpose, fresh unslaked lime in the proportion of two and one-half pounds to a pail of water, cannot be improved upon. As an additional safeguard, one half a teacupful of a good commercial disinfectant may be added to the solution.

Note:—The mite causing scaley-leg is a different specie to that commonly called the depluming mite which attacks the feathered portions of the body, and the former, seldom, if ever, leaves its localized position upon the legs.

WITH PROPER CARE MOST COMMON DISEASES CAN BE PREVENTED

A. B. Wickware, Experimental Farm, Ottawa.

During the past few years the increasing demand for eggs of a standard quality, and the high prices prevailing for this commodity, have led to an effort amongst Poultry Instructors and Pioneers in poultry raising, to stimulate this industry by advocating the use of backyards in cities and waste ground in rural districts for maintaining a small flock of fowl. It has been shown that a decided profit can be made where ordinary precautions are taken in regard to feeding, cleanliness and selection of breeding stock.

With proper care, most common diseases can be prevented, and of all the measures directed towards this end, sanitation plays the most important part.

From the commencement of chick life to the adult stage, the pathway of health is beset by diseases and disorders which annually account for large losses.

This is especially true on small holdings where the runs are limited and must of necessity be used year after year. Where it is not possible to rotate the runs, alternately cropping certain areas, with green feed, the entire surface should be covered with a good coating of air slated lime and after allowing this to remain on top for a few days, it should be ploughed under. This precaution serves to keep parasites such as tapeworms, roundworms, gapeworms, etc. in check by destroying the eggs which are nearly always present in the soil. Droppings from fowl should never be spread on land to which chicks have access, and during the fly-breeding season, all manure should be kept in covered boxes or treated with some good disinfectant before being put upon the land. This applies more particularly to small holdings and to plants devoted exclusively to raising poultry. All chicks which die should be burned and it is a good plan to kill all weaklings and dispose of them in a similar manner. Close observation is essential to pick out ailing chicks or fowls and these should be killed if not particularly valuable or isolated from the remainder until the exact nature of the disorder is determined. Particular attention should be paid to the feed and drinking water and where young chicks are concerned, a daily scalding of the drinking fountains and feeding dishes will well repay such effort. Tuberculosis is a disease of adult fowls and is more frequently observed in older birds although pullet stock may become infected. Tuberculosis is usually introduced by buying pullets or stock from outside sources and such a practise is to be discouraged except when buying from reputable poultrymen, whose success depends on freedom from such conditions. Where exhibition stock is kept, all show birds should be segregated for at least two weeks upon their return from exhibitions and poultry fairs, as such a precaution often safeguards the flock from a serious outbreak of chicken-pox. In introducing new breeding stock, even if from reputable sources, the practise of quarantine is a safe plan to follow.

The proper disinfection of fowl houses, runs, utensils and droppings; the quarantine and segregation of recently imported fowls or those returning from shows; the elimination of spoiled feeds and impure drinking water; the sacrifice of ailing birds to determine the nature of the disorder, as well as the burning of all dead fowls, are measures, which if carefully followed, will do much to keep the flock in a healthy vigorous state and make the keeping of poultry a pleasant, profitable enterprise.

THE RELATION OF THE VETERINARIAN TO THE POULTRY INDUSTRY.

Robert Barnes, President, Canadian National Poultry Association.

From the day the first degree in Veterinary Science was conferred right up until the present time I do not think the veterinarian has had any connection with, or relation to, the poultry industry.

You may take this one statement as fact **the day of the insignficance of the hen is past** and when that is admitted, as it must be, where do you come in. Your activities cover diseases of horse, cattle, swine, sheep, dog and cat and why not poultry. To-day we have in Canada approximately 37,182,000 head of poultry valued at over $38,000,000. The production last year from these poultry was approximately 200,000,000 dozen eggs of a marketable value of some $90,000,000. These figures give some indication of the importance of the poultry industry in Canada and compare very favorably with the 3,657,860 sheep valued at $23,308,000 and the 3,904,895 head of swine valued at $54,842,000. Nor is the average poultryman adverse to calling attention to the fact that the value of the cattle in Canada was only $373,806,000 and the horses $314,764,000 in 1921. No value is placed upon, nor are statistics available in the case of the cat and the dog population from which practice some veterinarians derive a considerable income.

The whole point of this is that the hen, in reality is a very significant thing and very much more so than the profession have believed. It should be remembered that the values given above are based on consumptive value and hundreds of the hens averaged above at 90c. each, are worth many times that figure. I might state instances almost without number of big prices paid for poultry but one or two will suffice. Less than three weeks ago a large Toronto poultry breeder sold three birds for $1200.00. Some two years ago a pen of ten utility birds sold for $275. These figures are not of the imagination but instances of sales which actually took place. Surely the treating of a $400.00 hen is of as much importance as the treating of any other animal of similar value.

The men who have entered in "Record of Performance" for poultry with the ultimate object of registering their birds, and the men who are exhibiting poultry are all pedigreeing their stock. Any break that may occur through the loss of individual birds is just as serious as the loss of a good sire in horse breeding. Very little has been done up to the present with regard to the study of poultry diseases. While the average veterinarian may not have the necessary time to make a thorough study of poultry diseases he could at least make himself acquainted with the more common of them, thereby be in a position to give advice that may save thousands of dollars to poultrymen and incidentally to the country. In many instances the saving of a bird is merely a matter of expert knowledge which at the present time to a large extent is lacking. Instances have been known of people shipping dead birds from the Prairie provinces to the Experimental Farm at Ottawa to find out what is the matter with them. In such cases decomposition may have set in and very little help can be given. If such cases could be handled by the local veterinarian he would find that his practice would grow very rapidly.

There is another feature of the poultry work that the veterinarian can handle and that is caponizing. When the producer, and more particularly the farmer producer, realizes that he can add from two to four pounds to the weight of the male birds he markets, he will be anxious to have his surplus cockerels caponized. Further than that the capons will give consumers much better satisfaction on account of the more even distribution of flesh and their more tender eating qualities.

It is therefore, quite obvious that the veterinarian can and should play an important role in the poultry industry in this country. If he is to properly function he must fully realize that the treatment, prevention or control of disease in poultry is of paramount importance and should receive his earnest attention in order that the development of the poultry husbandry may reach the desired height; failure to realize this will conduce to a waste and destruction of one of our present-day national resources.

National economy has for some time past been the key-note of the addresses delivered by our politicians. National economy is not feasible unless economy be practised with everything tending to effect our production and as a consequence our revenue. To produce results economy must be applied to the individual, whether it be animal or man and in this the veterinarian can play a big part.

STALLION REJUVENATED.

According to a press dispatch, the 20 year old stallion, Patrick, belonging to the Peruvian Stud Farm at Berlin has been given the Steinach gland rejuvenation treatment.

His attendants declare that the old veteran has experienced an extraordinary change as a result of the operation and looks like a stallion 10 years old.

Old Patrick was "rejuvenated" in an effort to raise the standard of Prussian race horses. The operation consists of introducing fresh glands and uniting them with those already in the body.

"Owing to the cold winds that have prevailed of late, earthworms have not appeared above the surface until the sun has warmed the soil." stated a well known naturalist. The number of early birds faced with unemployment is said to be causing the authorities considerable alarm.

—London Punch

We are ready to receive long lists of new subscribers to the Canadian Veterinary Record, and longer lists of renewals for 1923.

Have you paid your subscription for 1922?

*The So-Called "Orchard Horse Diseases"

P. Mackintosh, Yakima, Wash.

During the past six years my practice has been located in a locality where fruit raising is the main agricultural industry. This fact has enabled me to make a practical study of this malady which affects Orchard Horses.

My first experience with this condition was in the spring of 1916 and I have been in personal contact with it from that date until the present time. Prior to 1916 many of our clientele state that they had lost horses with symptoms similar to those of the orchard horse disease but at that time it was called Influenza and Forage Poisoning.

Personally, from close observation of the different illustrations presented to me in my practice, I have called the condition mentioned above, "Arsenate of Lead Poisoning", in its different forms and complications of such poisoning.

As a general rule the cover crop in orchards is alfalfa, all crops depending on irrigation for moisture. Alfalfa is cut from between the trees of orchards three or four times in one season.

During the spring and summer months the orchardist sprays his apple and pear trees from three to five times, depending on how bad the Aphus are, with arsenate of lead, (strength 10 to 20 lbs. to each 150 gallons of water). We have made a point of observing the orchardist during the process of spraying, and I can state with certainty that the alfalfa around the trees and also in the area between the rows of trees is saturated with arsenate of lead spray. The alfalfa is cut and removed from orchards for feeding purposes, and the process repeated again until the season's spraying is finished, and the different cuttings of alfalfa are taken care of.

Knowing that lead is an accumulative metal and that we have little or no rain fall, there is no possible way of the spray being washed from the alfalfa.

I would like to divide the clinical cases into two forms of acute and two forms of chronic.

First form of acute poisoning is where animals consume the arsenate of lead directly from containers. We are frequently called to treat such cases as these during spraying season.

Second form of acute poisoning is where animals pasture on orchard hay during the process of spraying, or while the hay is still wet from spray. This form of poisoning is more common in cows, the mistake was formerly made, and is yet at times, of tethering cows in the orchard and not removing them during spraying, consequently there were quite a number of family cows lost in this way. We are called to cases now where animals have broken their tethers and gotten into freshly sprayed orchards. Might add here that orchard hay freshly sprayed with arsenate of lead is very palatable to both horses and cows, which fact is probably due to its metallic taste.

General Symptoms.—A farmer may call up and say "Come right out; my horse is choking;" or "my horse is having a fit". Many times when we arrive on the farm the animal is quiet, but on exertion, such as trotting for a block, he will roar and if not stopped at once he will go down. We also notice on closer observation a hanging of the lower lip, and when you catch the lower lip and pull it away from the lower incisor teeth it will not snap back into place like that of the normal horse, also there is the lack of use of the Panniculus Carnosus, I have often taken a fold of the skin in the region of the flank or along the side, and have run a suturing needle through without the least response from the subject, and we have performed tracheotomy without the use of the twitch. We also see in cases of this kind, knuckling if started up suddenly, and string halt some-

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***Address given before Northwestern Veterinarians at Vancouver, B.C.**

times. In chronic conditions Laryngeal Hemiplegia is the most startling symptom.

My theory is that horses fed orchard hay that has been sprayed with arsenate of lead, for any length of time, accumulates enough lead to cause this condition. Chemistry taught us that lead is an accumulative metal or drug, also that it has a special affinity for nerve cells. Due to the fact that the left recurrent nerve is one of the weak nerves of the animal body, it seems reasonable to me that it should be one of the first affected, manifested by roaring.

Treating.—Treatment is confined to cases showing Laryngeal Hemiplegia without Peripheral complications, these cases are operated upon. We have done both the Williams and McKillip roaring operations with varied results. We have been doing this since 1916 and there are quite a number of horses that were considered useless then, working at the present time.

Differential Diagnosis.—Lathyrism, the toxic effect produced by feeding on Lathyrus Sativus or the Indian pea.

First form of chronic poisoning, are horses that have been fed orchard hay for a time, the length of time before symptoms are noticed depending greatly on whether the horses are being fed hay from an old or young orchard. Horses that come from a locality where there is open farming (no spray being used) and fed on hay from an old orchard become affected in from six to eighteen months, while horses that are fed hay from a young orchard or we might say raised with the orchard, may go for a period of six years without showing symptoms.

This is explained by the fact that young orchards do not consume such large amounts of spray as the trees are small. In older orchards the space between the trees is covered by the top foliage which necessitates a larger amount of spray and thus the alfalfa becomes saturated by spray.

Second form of chronic poisoning.—These cases are most common in the fall and winter seasons. When the orchardist gets his fruit picked he generally turns his stock into the orchard to graze. The length of time before a horse becomes affected depends on each individual case, as to age of orchard, amount of alfalfa left in orchard and if the horse depends on grazing for feed, (for some orchardists take their horses in at night to feed them) then feed them again before turning them out in the morning.

The horse or horses that are turned out in an orchard and are not hand-fed, are the first to become affected, and this is most common where feed is short in the orchard, and where the animals eat the alfalfa around the base of the trees.

In short the animal affected will develop an inflammation of the mucous membrane of the posterior buccal cavity with pharyngeal paralysis, and in many cases choke, there is an increase in temperature, mechanical pneumonia and the usual fatal termination.

We lose more horses that have grazed in the orchard in fall and winter than in any other way.

MONTREAL INSPECTORS

Considerable interest was taken in Montreal, September 23rd, in a baseball match between the Veterinary and Lay Inspectors at that place, which resulted in the veterinarians winning the game.

A return match was played the following Saturday, and again the bullet-ball of the Vets proved too strong for the submarine pitcher of the Lay Inspectors.

The Montreal team intend going to Toronto next year to carry back home Dr. Torrance's challenge cup.

300 Nile Endurance Races To Determine Horse Values,

E. W. Beckwith, Chicago, Ill., U.S.A.

It will interest members of the veterinary profession to know that the 300 mile endurance races, held each autumn in the United States, to determine as nearly as possible the type and breeding of the horse best suited to the rigors of cavalry service, are thoroughly conducted by horsemen cognizant of the many considerations entering into a horse's fitness. The breeding of each entrant is recorded, they are fitted for the test ten months beforehand, so that the final comparison will be based on conditions as equal as possible to start. Each horse is examined by the official veterinarian prior to the test and any blemishes noted. Each day of the test, a new examination is made and the temperature and respiration recorded. Along with the veterinarian, is the ever-present humane officer, who is satisfied to know that any horse showing undue fatigue or handicap of increasing lameness, is promptly withdrawn. The predominating purpose of the ride is to emphasize soundness, stamina and weight-carrying ability within reasonable limits of speed, and to reward attention to condition especially.

The horses travel the 300 miles at the rate of 60 miles on five successive days, in a minimum of nine hours and a maxiumum eleven hours per day. The weight carried is not less than 225 pounds, including rider. The proportion of live weight and dead weight is taken into consideration, in case the rider weighs more than 155 pounds.

Colorado Holds Similar Test

A practical application of the same idea was made in Colorado this past summer, holding a five day race under the same regulations as the Eastern event, except that the weight carried was 200 pounds, and animals of unknown breeding could enter. This brought out every description of bronc and cowpony, for, while the standards of horse breeding had fallen somewhat in Colorado, there was hardly a rancher who did not think some favorite of his had plenty of mettle to win easily. To bo back into the circumstances preceding the event, will show the practical value of the test for all of the western states.

Colorado uses approximately one hundred thousand saddle horses, raising most of them and importing some. The quality of the horses has been undependable for several years, however, and the owner of the Trinchera Ranch, Bryant Turner, finally bought a stallion which he considered had the qualities to get fast, sure-footed, level headed animals of great endurance, —such as the gallop over rocky and uneven terrain in the western country, requires. His action interested Major Henry Leonard who has been closely identified with the endurance tests of the East since their inception. Additional sires, suited to beget good saddle horses, were obtained through the United States Army Remount Service and distributed through the state in 1921 and 1922.

Then, in order to focus attention on the value of using these sires, and to bring home to western men other important factors which are brought out in endurances races, it was decided to hold a five-day, 300 mile race, out from Colorado Springs. The routes were arranged out from Colorado Springs 30 miles and back 30 miles, in five successive lines, similar to a five pointed star, and prominent sportsmen put up $2,000 in prize money and a silver trophy.

To make a long story short, horses of every conceivable type entered training in the spring, simmered down to 18 possible entrants and finally 12 crossed the barrier on the opening day,—three from the U.S. Army, two polo ponies, one a saddle horse used for pleasure riding and the other six seasoned cowponies. Some had consistent training; others were taken from ordinary work without special conditioning. The first to fall out was a chunky cowpony who was too exhausted, after 90 miles to continue. The next out was another cowpony on the second afternoon, for lameness, a third and fourth the next day for the same reason. The other eight finished, only three of them, however, going all the way through without any sign of lameness. These three were the only straight-gaited horses in the contest.

Defective Action a Great Handicap

The behaviour of all horses was very closely studied from start to finish, and in every instance, the horses that were inclined to be "nigger-heeled," or "pigeon-toed," with defects in action, such as winging or interfering, developed difficulty as time went on and cut their pasterns or bruised their fetlock joints before the test ended. Regarding this, Major Henry Leonard says: "These contests have fixed indelibly in my mind, the fact that straight action is a utility characteristic of highest importance, which horse breeders generally have not appreciated as they should. Defective action means self-injury when horses are tired, and earlier disability. The British army officers, when here during the World War, refused to buy any horse with a material defect in action, on the ground that such a horse, when tired, became disabled quickly, and this is the one point which every endurance test has tressed in particular."

In the Colorado race, the first prize was won by a thoroughbred; the second, by a blue roan of unknown breeding, alleged to carry some Morgan blood; the third was one-half Thoroughbred; the fourth a horse of Standardbred blood and type; and fifth, a three-quarter Thoroughbred polo pony, (other one-quarter said to be mustang), the sixth, a rather rangy gray, said to be by a "quarter horse" stallion. While these results do not justify any breed the exclusive claim to begetting good saddle horses of the required endurance, it does demonstrate that good blood and conditioning are necessary to win.

ILLEGAL CANVASSERS

It has been brought to our notice that there are some slippery gentlemen operating in Ontario representing themselves to be collectors for the Canadian Veterinary Record.

We warn our readers not to be hocussed by strangers who state they are representing this paper. Subscriptions to the Record should only be paid through the Secretary-Treasurers of the Provincial Associations or direct to our office in Toronto.

The Record does not solicit subscriptions through canvassers, and in the event of any strange person presenting himself for the purpose of collecting monies for the Record, our readers are requested to show him the door or as a preference hand him over to the police for examination. ation.

An excellent absorbent application for capped hocks, elbows and knees where paracentesis is not desired is a mixture of Tinct. Cantharidis, ounces 2. Churchills Iodine, ounces 2, Spts. Camphorae, ounces 1. F.M., Paint the part two or three times daily until thick scab is formed. Discontinue treatments and keep well lubricated with vaseline.

—Dr. Devereaux, Brantford, Ont.

For the first time in 25 years, Mrs. ——— has given birth to triplets.—Country Paper Notice.

—Once you get the knack, you never really lose it.

REMINISCENCES OF THE GREAT WAR.

The articles, "Remiscences of the Great War," have been written by Captain Cecil French, the first portion of which appeared in the September issue of the Record. This article is of considerable interest, not only to the number of Veterinarians who served overseas with the Canadian and Imperial Forces, but will help to clear up many queries from other sources regarding how funds collected in Canada for Humane Societies were expended.

Captain French is an Englishman educated at Hastings in England and at Bingen-on-the-Rhine. He first came to Canada in the early nineties, graduating from McGill University in Veterinary Science in eighteen hundred and ninety-four. As a scholar he was exceptionally brilliant, winning two scholarships and a medal for general proficiency. After finishing his College Course, Captain French took post graduate work at Munich in Comparative Pathology.

Prior to the war he conducted a large canine practice in Washington, D.C., where he wrote and published the text book "Surgical Diseases and Surgery of the Dog."

When the war commenced he returned to Canada accompanied by his son and made repeated efforts to join up, but was refused by reason of age, etc. His son, Ernest, however, obtained a Commission in the Royal Flying Corps with which he served with considerable distinction until finally brought down over the German lines and taken prisoner. Captain French proceeded to England at his own expense, where he was accepted as "fit" and received a Commission in the C.A.V.C. He served as Veterinary Officer with the Field Artillery, and was present at the second battle of Cambrai On return to England just prior to the termination of hostilities he commenced work on an extensive history of the Canadian Veterinary Service in war. For this purpose he had access to official war Records and Diaries at Green Arbour House, Old Bailey, London.

The incidents recorded in his article "Reminiscences of the Great War" are facts, true in every respect, supported by official records and documents supplied for that purpose. At the present time Captain French is living in Victoria, B.C. We hope to print further articles from Captain French, dealing with the work of the C.A.V.C., in the Great War.

During the month of October the Record received a visit from Mr. E. S. Akin of Syracuse, New York. Mr. Akin is an investigator from the Horse Association of America. He came to Toronto at the instigation of Mr. Wayne Dinsmore who was in Toronto during the summer, and gave an address before the Ontario Veterinary.

Mr. Akin spent several days visiting a number of large transportation firms in the City. He presented the case for the horse drawn delivery system as being more reliable and economical than motorized equipment. In addition he has secured some very valuable data for the Amercian Association.

The American Veterinary Medical Association intend holding their next Annual Convention in the City of Montreal. Already the 1923 badges have been issued to Members and contains the ominous words, "Montreal in 1923. The Land of Liberty." We gather from this that coming events cast their shadows before them.

According to a leading veterinary surgeon the practice of kissing dogs is a factor in the spread of pyorrhoea. No doubt this is why so many dogs prefer just to shake a paw.—Punch.

A doctor married a girl whom he had ushered into the world 20 years before. How is that for real love at first sight?

Lenine is reported as saying that Russia is heaven. In which case we believe that hell is a darned sight worse than is commonly believed.

Junior—"I hear Waggoner is going to take up singing lessons."
Senior (unconcernedly)—"He's bound to be a howling success."

ABSTRACTS and REVIEWS

AN INDEX SYSTEM OF VETERINARY TREATMENT By William Scott, F.R.C.V.S., F.R.S.M., F.R.M.S., Pp. X + 635 with 195 figures. Royal 8.00. Published by BAILLIERE, TINDALL & COX, 8 Henritta Street, Convent Garden, London, Eng. Price 31s6d net.

We doubt if there is any one who would be better qualified than Professor Wm. Scott to write this Index System of Veterinary Treatment, or if there is anyone who could have produced a more complete or useful book for the Veterinary Surgeon.

The author in preparing his work, has used an alphabetical system in submitting the contents to the reader, which is quite new.

Professor Scott has secured collaborators of international reputation for the sections dealing with tropical and obscure diseases. It is therefore comprehensive without being cumbersome. It is bound to appeal to the busy reader, because redundancy has been avoided, and one is able to find and study his subject without having to wade through a lot of endless diversions or needless paraphrase.

The knowledge of clinical medicine and its application to laboratory methods, as well as the author's familiarity with recent bacteriological experimental work is well demonstrated in the sections on bacterial diseases, particularly in respect to Contagious Abortion, Tuberculosis, Bacterins, Vaccines, and Immunization.

The book contains contributions on tropical diseases from well known authorities, among whom may be mentioned Mr. H. E. Cross, M.R.C.V.S., in "Diseases of Camels". Professor Hobday on the three subjects of which he has made a specialty "Cryptorchidism, Ovariotomy and Roaring". Noel Pillars on "Parasitic Diseases" and Lieut-Colonel H. Watkins, Pitchford, C.M.G., on "African Diseases".

Dealing with Colics, the writer states "Many authorites attribute colic to errors of diet, over-work, exposure to adverse influences, poisons, etc.," Proceeding we read "We must remember that bacteria of many types and species, are to be found leading a saprophytic existence on the whole length of the mucosae, from the mouth to the anus, while in addition many foods in certain stages of decomposition carry an excess of bacteria thereby adding fuel to the fire. The author advocates rational treatment consisting of fortifying the protecting elements, destroying the bacteria and eliminating them and their products. Bacterial flora, acid and gas formations are treated by antiseptics and alkalies. We like this chapter on colics. It is good reading and alone worth the price of the book to Veterinary Surgeons engaged in practice where every day of the week they meet with colic in all its peculiar and interesting manifestations.

Very singular is the author's faith in the therapeutical value of the seaton. He asserts that many of his patients would have come to an untimely end had it not been for the seaton. It is explained that the primary function of the seaton is a localized hyperaemia and consequent leucocytosis, probably exercised through the vaso-motor system. He recommends the seaton for the treatments of painful nerve affections, sprains of deep seated muscles, early navicular affections and fistulous conditions.

We are not very familiar with seatoning, but we wonder if it is so generally used by present practitioners to devote three pages describing and illustrating the methods and value of application. But the author has given so much of good value that we refrain from offering criticism of any single portion. The whole work is well prepared and there are few errors, (one in the index) that it reflects credit upon the care exercised in proof reading.

The publishers, Mesrs. Bailliere, Tindall & Cox deserve great praise. The book is unsurpassed in quality of type and finish. It is ostensibly a book for the student and practitioner and will serve as an excellent reference. It has to be read to be appreciated, and those of us who have had the privilege of reading the book, are convinced that we would not care to be without a copy.

T. C. E.

REINDEER IN ALASKA — SEYMOUR HADWEN AND LAWRENCE J. PALMER. U. S. Department of Agriculture, Bull. No. 1089, Washington, D.C., September 1922.

This bulletin presents the results of a study of reindeer grazing, range and herd management, forage plants and of diseases and parasites. Alaskan reindeer are derived from the original importations of 1280 animals from Siberia during 11 years beginning in 1892. In 30 years the herds increased to from 130,000 to 200,000 and probably 100,000 more have been killed for meat and skins. The reindeer subsists entirely upon the native vegetation. Most of the present grazing is on the coast ranges bordering the Arctic Ocean and Bering Sea, including the islands. Close herding and overgrazing has occurred in some localities and has resulted in poorly nourished animals and heavy infestations of parasites—"parasitism and overgrazing commonly go together". The cystic forms of the tapeworms **Taenia hydatigena (T. Marginata) Taenia echinococcus** and **Taenia krabbei** are found in reindeer. The herd dogs are the hosts of these tapeworms. The treatment used and recommended consisted of giving 3.0c.c. of Oleoresin Malefern in two ounces of warm milk after a 12-hour fast. The dog's head is then tied for three quarters of an hour to prevent vomiting, after which a dose of Areca-nut is administered in milk and the dog's head again tied for half an hour.

[Arecoline hydrobromide, 1-8 to 1-4 grain, given orally, and the preparation known as "Tenaline" are efficient taenicides for dogs and have the advantage in not requiring fasting before administration nor head-tying to prevent vomiting.—Reviewer].

The warble fly is a serious enemy. A photograph shows the skin of a yearling reindeer infested with warble grubs—"about 1000 larvae of the warble fly (oedemagena tarandi) were counted on the back. With such a number the hide was practically riddled, one hole being punctured by each grub." Among other injuries and diseases of reindeer briefly mentioned are broken bones, broken horns, long hoof, foot rot, dermatitis and abscesses, eye trouble (Keratitis), warts (Papilloma), rheumatism and rickets.

Dehorning experiments made on two yearlings were not successful. About 10 days after the horns had dropped the new growth surrounding the horn core was treated with sodium hydrate. Only one horn on each animal was treated. "In about three weeks the scab began to lift at one corner and in a few days the treated horn was growing just as rapidly as the untreated one—the injury appeared to stimulate the growth as well, and by the latter part of August it was found that the treated horn was much larger than the untreated one." This is well shown in the photograph.

The bulletin contains many interesting observations and valuable information to anyone interested in reindeer and reindeer industry.

—E.A.W.

POULTRY DISEASES. By B. F. Kaupp, B.S., M.S., D.V.M., Chapters XX, page 342. Published by Alexander Eger, Suite 800, 9 South Clinton St., Chicago, Illinois.

The appearance of this book marks the third revised and enlarged edition of a treatise on poultry diseases by the author. The text-books dealing with this phase of comparative medicine are few in number, so that the efforts of the author to present a work for the guidance of veterinarians and those interested in the scientific treatment of poultry diseases, is a commendable undertaking.

To review such a volume impartially and intelligently is no mean task, but in passing, a few critical suggestions may not be amiss.

The first chapter, dealing with the anatomical structure of the fowl is necessarily restricted, but gives a general idea of the make-up of a bird, A subject of such importance is, however, worthy of individual and comprehensive consideration.

Chapter No. 2 is concise and to the point.

Chapters Nos. 3 and 4, dealing with internal and external parasites, are almost identical with sections 3 and 4 of the original volume. The subject matter would be much improved if the generic classification and specific determinations were brought down to date. A check list of all the animal parasites fo poultry, recorded to date would also measurably add to its value.

Chapters Nos. 5 to 11 are fairly comprehensive and afford the student and practitioner a means of familiarizing themselves with the benign and infectious forms of disease affecting poultry.

Chapter No. 12 dealing with tumours, when judged by modern standards, leaves much to be desired in the matter of classification and terminology of new growths.

The remaining chapters appear to contain information of a useful character, although Chapter XVIII is rather foreign to a text-book primarily designed as a treatise of diseased conditions in fowls.

Speaking generally, the work is a needed contribution to veterinary literature and would be rendered invaluable by some deletions and a revision of certain chapters to modernize them.

A reference list at the end of each chapter or terminal bibliography would also greatly enhance the value of this volume for those interested in research problems.

The publisher is to be complimented upon the printing of this volume, the line cuts, the photographic illustrations being excellent, while the paper, clearness of type, etc., are all that could be desired.

—A.B.W.

REINDEER & MUSK-OX — REPORT OF THE ROYAL COMMISSION UPON THE POSSIBILITIES OF THE REINDEER AND MUSK-OX INDUSTRIES IN THE ARCTIC AND SUB-ARCTIC REGIONS OF CANADA. Department of the Interior, Ottawa, 1922.

The Commission was appointed May 20, 1919, and consisted of J. G. Rutherford, of Ottawa, Railway Commissioner, (formerly Veterinary Director General of Canada), J. S. McLean, of Toronto, Manager, Harris Abattoir Co., J. B. Parkin, of Ottawa, Commission of Dominion Parks and Vilhjalmur Stefanson, Arctic Explorer, the latter resigning on March 12, 1920.

Four hearings were held at Ottawa during the year 1920, at which evidence was taken from thirty-five witnesses. In addition, written submissions were received from a number of persons conversant with conditions in the Canadian Arctic and Sub-Arctic, and in Alaska. The report deals separately with the Musk-Ox, Reindeer and Caribou and contains very valuable and interesting information on the habitat, characteristics, numbers, domestication, conservation, grazing and herding, meat, fur, wool, etc., of these animals.

The recommendations made by the commissioners include, as regards Musk-Oxen, the surveying by aeroplanes or otherwise of the localities where these animals are to be found, the rigid enforcement of a policy of preventing further slaughter except in case of dire necessity, and the establishment of an Experimental Station in one of the northern islands. In respect to the possibilities of the reindeer industry, a searching Departmental investigation in point of vegetation and grazng conditons is recommended and the establishment in such localities as the investigation shows to be desirable of Experiment Stations and reindeer herds.

There are fourteen appendices to the Report dealing with the Reindeer Industry in Alaska, Northern Europe and Siberia, Dr. Grenfell's Experiment with Reindeer in Labrador, the Reindeer herd at Lobster Bay, Lapp Immigration to Northern Canada and Lapps as Herders, etc.

The report covers 99 pages and contains 31 excellent illustrations from photographs. —E. A. W.

J. A. Allen, V.S., B.V.Sc., Animal Pathologist, Fox Research Station, P.E.I. Article published in Journal of American Veterinary Association. April, 1922.

J. A. Allen, Animal Pathologist, Fox Research Station, P.E.I. Article published in Journal of American Veterinary Association, April, 1922.

The author has for a number of years conducted investigations into diseases of foxes in Prince Edward Island. These investigations have covered a broad field, embracing also studies in nutrition and hygiene. During the past two years Dr. Allen has contributed valuable articles on his work for the benefit of the readers of the Record. His later studies have been devoted to the causes of infantile mortality in young fox pups and the fox farmers have been asked to co-operate by sending to the laboratory at Charlottetown all carcasses of dead puppies that die on ranches.

A large number of pups die as a result of worm infestations and the Department are anxious to obtain some definite information on the best methods of treatment for worms. The value of carbon tetrachlorid against hookworms in the silver black fox showed, in Dr. Allen's experiments, an efficiency of 93% in animals treated. The dosage was at the rate of 0.3 mil per Kilo of body weight which is the same as found by Hall to be efficacious in dogs. Compared with thymol and chloroform as anthelmintics it was far superior. The author finds that carbon tetrachlorid has a high efficiency against ascarids which were present in the animals used in the experiments.

—T.C.E.

WHERE DO THE VITAMINS COME FROM? From Journal of Laboratory and Clinical Medicine, May, 1922. References. Jour. Biol. Chem. 1922, 1, pp 311, and 339.

It is still a question in what plants and animals the vitamins originate. Is there any animal which can synthesize a vitamin? If this can be answered in the negative, we may ask, what plants synthesize vitamins, and what are the conditions essential to such a synthesis? As early as 1913 it was suggested by Funk that vitamins secreted in cow's milk do not originate in the body of the animal, but come solely from the cow's food. If this be true, it follows necessarily that the richness or the poverty of cow's milk in vitamins depends solely upon the food supplied the animal. Since Funk made the suggestion, numerous investigators have experimentally studied the subject and, so far as we know, have quite unanimously come to the conclusion that mammals at least, do not synthesize vitamins. In 1916, McCollum and his colleagues concluded that vitamins A and B pass into the milk only as they are present in the food of the mother. Two or three years later Steenbock and colleagues ascertained that the amount of fat-soluble vitamin A present in butter is subject to reasonable variation and especially to the food supplied the animal. In 1920 Hess and Unger advanced the idea that an insufficiency of vitamin A in milk might be due to the winter food of the cow, and about the same time Barnes and Dutcher and their co-workers reported a marked seasonal variation in the antiscorbutic properties of cow's milk; indeed, it seems to be quite uniformly shown that the vitamins in cow's milk at least, are determined by the food supplied the cow. Recently, Kennedy and Dutcher have used for their rat-feeding experiments two types of milk; one produced on a ration typical of that used on some farms during the winter season and known to be deficient in its vitamin content, and a second representing that produced on a ration carrying ample amounts of vitamins A and B. These investigators state their conclusions as follows: "(1) The presence of vitamins A and B in cow's milk is entirely dependent upon their occurrence in the ration. (2) Stall fed cows will produce a milk rich in vitamins, provided their ration consists of a proper combination of grain and leafy foods. (3) A vitamin-rich milk is not necessarily correlated with access to pasturage. (4) Ten c.c. per day of either winter or summer milk is adequate to furnish either vitamin A orB to a rat,provided the ration of the cow carries each in amounts adequate to meet her requirements. (5) Five c.c. of the same milk that produced normal growth when used on a higher level does not furnish enough of either vitamin A or B to meet the requirements of growing rats. (6) The effect of the vitamin is not necessarily one of appetite stimulation but rather stimulation of metabolic processes which promote growth."

In other words, Kennedy and Dutcher have shown that the difference between summer and winter milk, so far as vitamin content is concerned, is due to the food supplied the cow, and winter milk may be quite as rich in vitamin as summer milk, provided the cow is supplied with proper food during the winter.

Admitting that mammals do not synthesize vitamins, it has been held by some that low forms of plant life, and especially the yeasts, are concerned in this process; indeed, the taking of yeast to supply vitamins has become a fad among the semi-intelligent or semi-well informed people of this country. Yeast in various forms is now a staple article of diet among those who think they are keeping up with science. The question is, does yeast synthesize vitamins? If so, what are the particles used by the yeast in this synthesis? Some years ago, Eijkman, after he had shown that rice polishings contain large amounts of antineuritic vitamin, grew yeasts on these polishings and found, much to his surprise, that the polishings lost their antineuritic properties; in other words, the yeast had simply extracted from the rice polishings the vitamins. The yeast had not made any vitamins.

Recently, Eijkman and certain co-workers have gone into this subject, and report: "It seems, therefore, that yeast not only takes eventually its antineuretic factor as such from the culture medium but that it is not even capable of sythesizing the vitamin unless the medium contains at least the products of decomposition of the vitamin by heating."

This means that even the yeast plant does not possess the property of creating the ultimate constituents which are essential in the synthesis of vitamins. If this finding be corroborated, it must follow that yeasts vary in their vitamin content according to the food supplied them and that in order to get vitamins it would be safer to use the plant substances which we know to contain them.

—C. H. W.

A NEW MODIFICATION AND APPLICATION OF THE GRAM STAIN.

G. J. Hucker, J. Bact. 6, 395-7 (1921).

The stain is made as follows:—

(1) Gentian Violet Solution, Aniline oil 3 c.c., abs. alc. 7 c.c., water 90 c.c. Shake, filter and add Gentian Violet.
(2) Iodine solution, iodine 1 gramme K.I. 2 grs., water 300 c.c.
(3) Decolorizing Solution; Analine oil two parts, xylene 1 part, use 5 parts of this mixture and 95 parts 95% alcohol.
(4) Counterstain Bismark brown 4.5 gr., water (boiling) 50 c.c. Filter and add 30 c.c. of 95% alcohol.

This is especially applicable to smears of milk. 0.001 c.c. of milk is spread on a slide over an area of 1 sq. c.m. The fat removed with xylene, the slide fixed in 95% alcohol for 2 minutes, blotted and placed in the gentian violet solution for 45 sec., immersed in the iodine solution 1 min. destained the decolorizing solution until no more stain can be removed and counterstained for 45 seconds.

(John T. Myers in "Chemical Abstracts".)

—L. M. H.

FOOD POISONING.

S A Koser (Journ. Infect. Dis., July, 1922, p. 79) has studied the development of the common food-poisoning bacilli of the paratyphoid-enteritidis group in various foodstuffs by inoculating these organisms into various common articles of diet and measuring the rate of multiplication of the organisms in samples withdrawn at regular intervals. He finds that all the strains of the paratyphoid-enteritidis group multiply in the liquor of several common cooked vegetables, such as tomatoes, spinach, string beans, corn, peas, and also in milk, but not in highly acid media such as sauerkraut. In several meat products, such as corned beef, Hamburg steak, and red salmon, these organisms exhibited a marked ability to spread from one original point of inoculation throughout the foodstuff, although this occurred only under optimum temperature conditions— namely, at 37°C.; at lower temperatures practically no invasion of the surrounding food was found. In most of the foods the paratyphoid-enteritidis group failed to give any evidence of growth visible to the naked eye; there appeared no evidence of contamination, no odour, and probably no abormal taste. This is in accordance with the experience of reported cases of food-poisoning epidemics, when it is usually stated that none of individuals who partook of the infected food complained of any abnormal appearance, taste or smell. In foodstuffs contaminated with B. botulinus, on the other hand, it is usually reported that the infected food was noted to be abnormal with respect to either the odour, appearance, or swelled condition of the container. —C. H. W.

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SPONTANEOUS SPIROCHÆTOSIS IN RABBITS

M. M. Levaditi, A. Marie and Isaicu.

Published in the Revue Veterinaire, March, 1922, page 171. Translated by Eugene La Berge, M.V., Toronto.

The existence of a disease in tame rabbits due to a spirochæte which bears a remarkable resemblance to the Treponœma pallidum, the cause of syphilis in man, was discovered in 1914 by Arzt and Kere. This organism to which the same Spirochæte cuniculi has been given, produces lesions localized to the genital organs and sometimes to the nostrils. These lesions closely resemble those of syphilis. Apparently there is not the slightest difference between these two spirochætes excepting that the Spirochœte cuniculi is not transmissable to man.

Some interesting changes take place in the epithelium and papillae of the skin which became infiltrated by mononuclear leucocytes. The hair follicles also appear to play an important role. The disease is transmitted by direct contact.

This spirochœtosis is an exclusively local disease with no important spreading.

THE GRIFFITH METHOD FOR THE DIRECT ISOLATION OF T.B.

Harold W. Lyall, Am. Rev. Tuberculosis 1922. Vol. V, No. ii, 899-902.

Equal parts sputum and 10% anti-formin are mixed and well shaken. Cultures are made at intervals of 5-30 minutes from mixture. Six media were used. The most uniform results were obtained from egg-liver medium (four parts egg, one part liver infusion). Ninety per cent. of specimens yielded pure cultures and out of a total of 1080 tubes only 4.5% showed contamination. The results did not point to any one interval as being the most suitable for the transplant. Often the most luxuriant growths were in 20-30 minutes transplants. The ability of any special strain to withstand the action of antiformin must be considered. Initial growths varied from six to thirty days. 73% showed growth before the 15th day.

—L.M.H.

THE POSSIBILITY OF INCREASING MILK AND BUTTER FAT BY THE ADMINISTRATION OF DRUGS

A. C. McCandlish and T. M. Olson. J. Dairy Sci. 4. 474 85 (1921).

A study was made of the effect of castor oil, aloes and rhubarb, strychnine, sodium cocodylate, urotropine and C^6H^5COOH and Potassium Iodide on 4 cows. The results varied greatly and show that drugs cannot be relied upon to favorably influence the yield of milk or butter fat. Castor oil induced a marked decrease in fat, both in yield and per centage. The aloes-rhubarb mixture was the only drug to produce increase in fat per centage in every cow.

—L.M.H.

This is the last number of the Record for the year 1922. Have you paid up to December, 1922? Only $2.00 per year.

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IDENTIFICATION OF THE BOVINE BY MEANS OF NOSE-PRINTS.

By W. E. PETERSON. Division of Dairy Husbandry, University of Minnesota. Published in the May issue of the Journal of Dairy Science.

The author remarks that breeding associations have always been confronted with a serious problem in the proper identification of animals for registration and of animals on official test. A sketch of the color markings, which must accompany the application for registration in the case of the broken colored breeds has been only partly successful and a greater difficulty has been experienced with the solid colored breeds.

With this problem in view work was commenced in October, 1921, on the suggestion of O. H. Baker of the American Jersey Club that the nose pattern might solve the identification problem if a satisfactory means could be devised of transferring the same to paper.

'Since October,' Mr. Peterson states, 'the nose prints of more than 350 animals have been taken and carefully studied. No two have been found to be alike, or near enough alike but what they could easily be identified as being prints from different animals. For the purpose of study the prints were grouped into different types which are now being given further study. The basis for this grouping is the design formed by the lines starting from the centre of the nose. According to this system six distinct types have been worked out.'

According to Mr. Peterson the taking of the prints has been found an easy and simple matter. One man can do the work alone when the animal is in a stanchion. Owing to free perspiration through the pores of the nose a piece of flannel cloth is used to wipe the nose before applying the ink, which is quickly done by means of a stamping pad. Mimeograph paper or newsprint give the best results. The paper is attached to a small board and the print is taken, as soon as the nose is inked, beginning with the lower edge of the paper at the base of the upper lip and rolling toward the face. Black stamping pad ink proved to be the most satisfactory.

Mr. Peterson points out that it is not necessary to have a perfect print in order to be able to positively identify it. Clear details on a portion of the print are all that is necessary. His photographs of nose prints of several cattle taken in October and again in November show how small a portion is necessary to identfy a print.

Prints taken monthly of a large number of old and young animals show no change of type or pattern so that it is reasonable to suppose that, like the pattern of the human finger print, the bovine nose print remains the same throughout life.

In his summary Mr. Peterson says that more work has yet to be done on some phases of the nose print. The work done so far he summarizes as follows:—

1. No two animals have identical pattern and therefore a nose-print will enable positive identification.
2. The taking of nose-prints is simple enough to be practical.
3. It is possible to identify prints as being of the same or different animal even if they are not perfect.
4. The pattern remains the same throughout life.
5. It is practical for the identification of cows on official test and may prove valuable in connection with the registration of all solid color cattle.
6. It affords a positive means of identification when claim for loss is made under livestock insurance companies.

—J.S.G.

During the absence of the Editor in August last Drs. J. Glover and R. H. B. Wheatley of Toronto, Ontario, kindly came to our assistance and took the entire charge of the September number of the Canadian Veterinary Record.

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CORRESPONDEECE

The Editor,
Canadian Veterinary Record,

Sir,—After reading, in the Canadian Veterinary Record, the report of of the British Columbia Veterinary Association regarding the co-operation between veterinarians and medical men in that province, I would like to offer my congratulations to those who conceived the idea of bringing together members of those two professions in order to discuss subjects common to both.

Is it now the time for every veterinary association to make an attempt to bridge the gulf which has existed too long between the medical and veterinary departments of public health? If we take the example of France, the medical men have been associated with the veterinary surgeons since the early periods and we are surprised to see the way they have profited by that association.

The medical profession has not perhaps sufficiently valued veterinary co-operation in this country, and has been inclined to deal with animal plagues transmissable to man without consulting those who really know most about the diseases of animals.

The knowledge of the disease of animals communicable to man cannot but be beneficial to the worker in human pathology and when one goes into the subject it is quite astonishing how many diseases are concerned. (I intend to discuss it some future date "Diseases communicable to Man" in a separate paper.)

"There is a long catalogue of disorders transmissible from animals to man," said Major Hobday, F.R.C.V.S., at a meeting of the Central Veterinary Medical Society in London, England, in emphasing the importance to both the medical and veterinary men of a study of these diseases."

"The practitioners of human medicine should be acquainted with these diseases as affecting animals while the veterinary practitioners should have some knowledge of the diseases occurring in man."

Major Hobday goes on to say: "that in most of these communicable diseases it is more incumbent on the medical men to be acquainted with their clinical aspects in animals than it is for veterinary practitioners to be acquainted with the same diseases in man, for the same reason that the diseases are primarily communicable from animals to man and rarely from man to animals."

In conclusion I ask again every veterinary association to do their best in co-operating with the medical profession in the combat against the transmission of certain diseases from animals to man which will be of great benefit for the comparatve medicine and a great move for our profession.

G. T. Labelle, Secretary,
Dominion Vet'y Inspectors' Ass'n
Quebec Branch.

A green monkey with a pink tail and brown eyebrows has been exhibited at the Zoological Park, Washington. Those who have inspected it say that it reminds them of the good old days before prohibition.—Punch.

"Do animals survive physical death?" asks the Rev. Vale Owen. If they do it seems useless to adopt drastic measures in the case of the dog next door.—Punch.

ASSOCIATION NEWS

Secretaries of all Veterinary Associations are invited to forward Reports and Announcements of their Association Meetings to the Editor for publicatoin in these columns.

ANNUAL REPORT OF THE BRITISH COLUMBIA VETERINARY ASSOCIATION

The annual general meeting of the B.C. Veterinary Association was held in the O'Brien Hall, Vancouver, B.C., on October 6th, 1922. The President, Dr. A. J. Damman was in the Chair.

The minutes of the last annual general meeting and the special general meeting were adopted as read.

The Secretary reported that Dr. F. Torrance, Veterinary Director General, would soon be in the city and that he would be pleased to meet the practitioners. The President appointed Drs. Alton and Chester to arrange the time and place of the meeting with Dr. W. Mackenzie.

A resolution was then introduced by Dr. W. Thomson of Keremeos, seconded by Dr. Strong, that this Association recommend to the conferring committee of the University of Toronto, that they confer the Honourary Degree of Doctor of Veterinary Science, on the Hon. Dr. S. F. Tolmie, our past president and ex-Minister of Agriculture, in recognition of his work whilst Minister of Agriculture, in endeavouring to have the British cattle embargo removed, and securing the admission that the embargo was no longer justifiable on account of disease of Canadian cattle, due to the excellent work of the Veterinary Profession in Canada; also for his assistance in cleaning up Mange in Alberta and Saskatchewan, which resulted in the removal of the blanket quarantine and facilitated the movement of livestock. Also, his foresightedness in calling and arranging the Ottawa Veterinary Conference, and his general attitude in advancing and seeking recognition of the Veterinary profession in Canada.

The Secretary Treasurer then read the financial statement and the President appointed Dr. W. McKay and Dr. R. T. Hoggan as auditors, these later reported the accounts correct. Kindly remarks were made of the Secretary's work during the past year.

The President then made his address, outlining the activities of the Association during the past year. He thought the Council had done good work in furthering the aims of the Association and profession, in seeking greater recognition. He thought the profession was not receiving their due amount of public recognition and he hoped next year's Council would have adequate support from the members to carry on the good work.

Under new business, Dr. Strong introduced the subject of Sanitary Inspectors, and said that he thought some of them were doing Veterinary Sanitary work. He suggested our affiliation with the Sanitary Institute, and thought the Veterinary Association should decide the qualifications of any person attempting to undertake sanitary work dealing with livestock, or food for human consumption. Discussion followed and the subject was referred to the incoming Council.

Dr. K. Chester, as the Association's delegate to the Ottawa conference, explained the objections to the proposed Canada Veterinary Act, which had been presented at the Special General Meeting held last December, and a letter was read from Dr. W. Thomson on the subject. It was moved by Dr. Strong, seconded by Dr. W. Alton and carried, that this Association again ratify the action of its delegate at that conference. The meeting was in favour of a Canadian Registration Act, that would obviate the necessity of Provincial Examining Boards.

The next business was the election of the Council and the following were nominated, some by written nominations from absent members: Drs. McKeown, Alton, Sparrow, Edgett, Hoggan, Howell, Chester, Darby, Swenerton, Ottewell, Damman, Jervis and Findlay.

The President appointed Drs. Strong and Keown as scrutineers. These later reported the following seven elected: Drs. Damman, Chester, Hoggan, Alton, Howell, Sparrow and Ottewell. At a Council meeting held later, the Council elected Dr. Geo. Howell as President, Dr. R. T. Hoggan as Vice-President and Dr. K. Chester as Secretary-Treasurer.
Dr. Dammon was nominated for President again, but declined, as did Dr. M. Sparrow. Provincial Inspectors, Drs. Alton and Sparrow and Dominion Inspector Dr. K. Chester were appointed Examiners, as provided by the Act.

The subject of raising the Annual Fee from $5.00 to $7.00 was then introduced, to cover the cost of the subscription to the Canadian Veterinary Record. Speeches were made for and against, but the majority were of the opinion that the $5.00 fee was high enough, and that members should be free to subscribe as they saw fit. There was no adverse criticism of the Record, and all expressed a willingness to help as much as possible. This was shown in a practical manner, by ten subscriptions being handed to the Secretary immediately after the vote was taken. It was then moved by Dr. Howell and seconded by Dr. Strong and carried that this Association forward the sum of $25 to the Canadian Veterinary Record, to be devoted towards the cost of publication.

This was all the business transacted, no papers being read, in view of the Northwestern meeting held last July. A suggestion was made that the next annual meeting be held in the Upper Country, but that rests with the Upper Country members, if they will choose a place and arrange a programme. There is no reason why we should not have another successful meeting as the one held at Penticton some years ago. The meeting then adjourned.

Kenneth Chester, Sec.-Treasurer.

ONTARIO VETERINARY ASSOCIATION.

It is hoped that all the members of the Ontario Veterinary Association will arrange to attend the Winter Meeting at Guelph, to be held in the Veterinary College on February 8th, 1923. The programme will include a symposium of Bovine Contagious Abortion and Sterility. Demonstrations will be given by Dr. Boyd, of Minnesota University. The whole of the second day will be devoted to large and small surgical clinics. The aim is to make this meeting a practitioners' convention.

Several members have not yet paid their dues. They are requested to attend to this little matter as soon as possible.

At a recent executive meeting representatives of the Toronto Humane Society, met representatives of the O.V.A. in order that both societies could get to understand each other and work in harmony to their mutual benefit. All present decided that the meeting did much good, and it was felt that both societies would benefit by the meeting and expression of co-operation.

J. S. Glover, Sec.-Treasurer.

Dr. A. Mclean O.V.C. 1910 has been appointed Meat and Milk Inspector to the city of Moncton, N. B.

There is still enthusiasm being shown and money spent in the horse game. The following horses are owned just across the border of New Brunswick in the State of Maine and raised through New Brunswick this summer in the Maritine circuit.

Colonel Bidwell mark of 2.03¼ for which was paid $ 7500
Jackson Grattan mark of 2.01¼ for which was paid $12500
Roy Grattan mark of 2.02¼ for which was paid $10000
Calgary Earl mark of 2.03¼ for which was paid $ 4000
John R. Braden mark of 2.02¼ for which was paid $ 4500

Just about a year ago now Bill Sharon with a mark of 211¼ was sold to Murphy in the States for $28000 in American money which netted over $30000. This horse was bred and raised in N. B., now has a mark of 2.04¼.

The Schedule of Fees, as laid down by the Ontario Veterinary Association has been adopted by many practitioners and the reports are that they find it a great help.

A sporting committee has been appointed to organize an Inspector's Bowling League at Montreal. This committee is composed of Drs. A. Grandmaison, President; G. T. Labelle, Secretary; and M. Chagnon, L. Laberge, H. D. McDonald, R. H. Rivington.

The President and Secretary of the B.C. Veterinary Association received copies of the proposed Milk By-Law of the City of Vancouver, from the City Medical Health Officer, inviting citicism and suggestions for improvement, to be presented at a meeting later. The Council proposed an amendment to the definition of the word "disease" which they considered inadequate. At the meeting which was held in the Court House, September 27th, Dr. Damman, as President of the British Columbia Veterinary Association was called upon to explain the amendment, which was adopted. Other Veterinarians took part in the discussion. The Chairman was Dr. Young, Chairman of the Provincial Board of Health. There were present, Medical Health Officers of Victoria and Vancouver, member of the Vancouver Medical Association, Professor Sadler of the University of British Columbia, Mr. Berry, President of the Fraser Valley Milk Producers' Association, and other prominent dairymen and farmers, also representatives of the City Health Department, women's organizations and the general public. The "Vancouver Province" devoted two columns next day to the meeting.

At the last convention of the A. V. M. A. at St. Louis, the Montreal Veterinary College was represented by Dr. J. H. Villeneuve, and the College of the Veterinary Surgeons of the Province of Quebec by Dr. M. C. Baker.

Dr. J. G. Jervis, of Milner, B.C., has been appointed lecturer in Veterinary Science at the University of British Columbia to succeed Dr. T. H. Jagger who has resigned.

COLLEGE NOTES

On October 19th, students of the O.V.C. combined with the O.A.C., in their annual field day, which was a great success, O.V.C. took third place on points. Following are names of those who won for the College:—W. R. Gunn, First prize for standing broad jump, and Second for 16 pound shot (over 140 pounds); A. R. Campbell, First prize for 16 pound shot (over 140 pounds), and Second for running high jump. The other men although unsuccessful in winning points, made splendid showing in nearly every event, considering their almost complete lack of training.

The presentation of awards to winners took place the same evening in the O.A.C. gymnasium. A welcome was extended to the Veterinary Students by Prof. Wade Toole, Honorary President of the Athletic Association, who congratulated them on having done so well at their first meet. Dr. McGilvray was called upon to speak, and in the course of his remarks said that in his opinion the move of the Veterinary College to Guelph was one of the best things in the history of veterinary education in Canada and would be mutually beneficial. He further expressed pleasure at the true sportsmanship shown by the O.A.C. men and felt sure it would be reciprocated by the O.V.C.

October 20th was an equally exciting day—for the Freshmen. On the morning of that fateful day they passed one by one through the ordeal of initiation, to the accompaniment of dreadful sounds produced by certain industrious Sophs. However, all survived and at the informal reception tendered them in the evening by the Sophomores they appeared none the worse for their experience. A pleasant evening was spent in smoking, yarns and music, seasoned with a few words of advice from Dr. McGilvray. The talent discovered promises well for an excellent entertainment at some future date.

OFFICIAL OPENING OF NEW ONTARIO VETERINARY COLLEGE.

The official opening of the Ontario Veterinary College at Guelph will take place on Tuesday, December 12th. This date has been selected as the Guelph Winter Fair is being held at the same time which will permit of reduced railway fares being obtainable. The official ceremony is expected to commence at 2.30 p.m. and may be followed by a banquet during the evening. While the list of speakers has not as yet been definitely decided upon it is hoped that the folowing may be able to attend and deliver addresses:—Hon. E. C. Drury, Hon. Manning W. Doherty, Hon. W. R. Motherwell, or his Deputy, Hon. S. F. Tolmie, M.P., Sir Robert Falconer, Dr. J. G. Rutherford, Dr. F. Torrance, Dr. J. R. Mohler, Chief of the United States Bureau of Animal Industry; President, J. B. Reynolds, Ontario Agricultural College; and W. B. Roadhouse.

On an occasion of this kind it is not possible to send a personal invitation to every Veterinary Surgeon and this announcement should be considered as a cordial general invitation to everyone to attend. This invitation is extended by the Department and by the Faculty of College and it is hoped that a good representation from the profession will be present. Everyone is welcome and the college staff will be pleased to extend a cordial greeting to those attending. Keep the date in mind and decide to be present on Tuesday, December 12th, at 2.30 p.m.

Cecil (confidentially to Alice)—"My dear, do you see Miss Archibald smiling at me?"

Alice—"That's nothing. The first time I saw you I laughed out loud."

A meeting of the student body of the O.V.C. was held in the common room on Thursday, November 2nd, at 7.30 p.m., with W.R. Gunn, President of the Student's Administrative Council, in the chair. The new con-the meeting. After the report of the stitution was present and adopted by Torontonensis delegates, it was decided that the three upper classes continue their relationship with Torontonensis. President W. B. George of the O. A. C. Philharmonic Society, extended a hearty invitation to the student body to avail themselves of the privileges of that society. After the business was finished the Students Social Society gave a short program which brought to a close a very successful meeting.

On November 11th, the Faculties and Students of the O.A.C. and O.V.C. met on the campus, facing the main building, just before 11 a.m. The Flag was dropped to half-mast and everyone stood at attention for the two minutes of silence. The Last Post was then played, after which the singing of the National Anthem brought to a close this simple and appropriate ceremony.

At the first two meetings of the Science Association the following papers were read and defended:—

Azoturia by A. Bishop.

Caesarean section in the sow, by G. M. Clark.

Canine tonsilitis by F. E. Egan.

Purpura hemorrhagica by Chas. Baker.

Parturient paresis by A. R. Campbell.

Canine distemper by O. C. Spencer.

Bridget— "I haven't spoken to Mr. Holmes in weeks."
Maggie—"How's that?"
Bridget—'I hate to interrupt him.'

Latimer—"No, mine are brown."
Prof.--'Have read (red) Freckles.?'

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A well known doctor has just christened his dog "Tonic". He says it is a mixture of bark, steal and whine.

——Wesleyan Church. Preachers; 11 a.m. Rev. J. P. Veall; 6.30 p.m. Rev. T. E Ham—Provincial Notice.
—Both, we believe, noted for their piety.

—Punch

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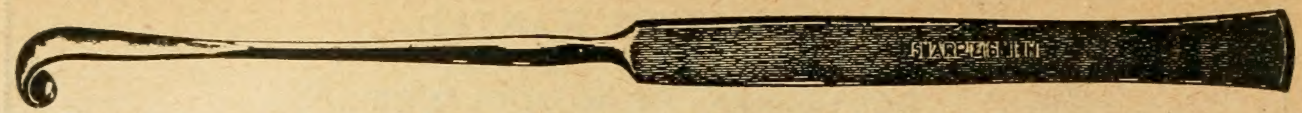

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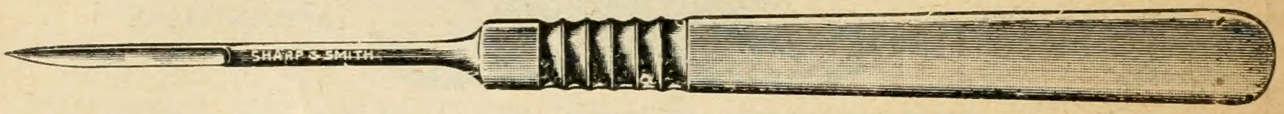

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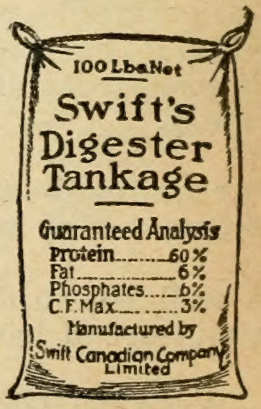

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